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AUGUST, 1925

No. 8

ENTRIES 6811-7572

AGRONOMY (CROPS AND SOILS)

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(See also in this issue Entries 6932, 6941, 6959, 6971, 6979, 7060, 7069, 7116, 7142, 7168, 7171, 7197, 7332, 7338, 7398, 7458, 7476, 7482, 7486, 7512, 7514, 7536, 7557)

CROP SCIENCE (ARVICULTURE)

6811. ANONYMOUS. **Centrifugal clarification.** South African Sugar Jour. 8: 861. 1924.—It was fully demonstrated recently at Sezela that it is possible to clarify cane juice in a centrifugal. Originally the raw juice was centrifuged and filtered in a vacuum filter after being tempered and heated, but owing to the gums and the wax in Uba juice the filter clogged. With certain alterations and reconstructed centrifugal a brilliant, clear juice resulted from the handling of tempered and heated juice.—*Nellie E. Fealy.*

6812. ANONYMOUS. **Crotalaria usaramoensis als Juteersatz und Gründünger.** [C. usaramoensis in place of jute and as green manure.] Tropenpflanzer 24: 22-23. 1921.—*Crotalaria usaramoensis* is recommended in the Dutch East Indies as a fiber crop and its culture may be of some interest to the natives. Harvest takes place 5-6 months after sowing. One ha. produces 250-400 kg. of fibers. They are gray and not as smooth and silky as those of *Hibiscus cannabinum*. The leaves produce an excellent green manure and a fodder for cattle, which is better than alfalfa. The related *C. juncea* is grown in British India.—*J. C. Th. Uphof.*

6813. ANONYMOUS. **Fighting cane fires. A Cuban invention.** South African Sugar Jour. 9: 73. 1925.—An apparatus for fighting cane fires, designed by R. S. Carpenter, General Manager of the Caribbean Sugar Co., is described. It is constructed on the principle that a small amount of water delivered under high pressure will extinguish fires as successfully as a heavy solid stream under lower pressure. A trial of the apparatus under conditions as nearly analogous as possible to cane fires proved eminently successful.—*Nellie E. Fealy.*

6814. ANONYMOUS. **Indigokultur in der Mandschurei.** [Indigo growing in Manchuria.] Propenpflanzer 24: 28. 1921.—Indigo growing showed some progress in Manchuria and other parts of China, since none was imported during the war from German sources. About $\frac{1}{2}$ comes on the market in Mukden.—*J. C. Th. Uphof.*

6815. ANONYMOUS. **Rattan.** Malayan Series No. 17. British Empire Exhibition. 22 p. 1924.—Rattans, climbing palms of 8 different genera, are most abundant in the Malay Archipelago. Rattans are first erect plants and remain small many years before they begin to climb. Some of them attain a length of 200 m., among the longest of known plants. The primitive methods of collecting, preparing and marketing rattan are briefly discussed, followed by accounts of 20 different kinds, based chiefly on field notes of foresters. These give the Malay names, botanical names in most instances, distribution, habitat, qualities, and uses. The qualities and uses of the plants are better known than their botanical classification. Rotan Sega, *Calamus caesioides* Bl., is cultivated in the Malay Peninsula, Borneo and Sumatra.—*L. H. Dewey.*

6816. ANONYMOUS. **Report on the work of the seed propagation division for 1923.** Jour. Dept. Lands and Agric. [Ireland] 24: 144-164. 1924.—A report is given on the testing of pure lines, hybrids, and varieties of wheat, oats, barley and flax. Pedigree varieties of oats are propagated by means of county extension plots, grown by farmers under supervision. Early sowing improves the quality of barley. Covered smut (*Ustilago Hordei*) of barley was reduced more effectively by steeping in 1-240 formalin than by dusting with cuprite powder or by spraying with formalin or steeping after presoaking. The germination was affected by steeping only with the concentration greater than 1-30.—*Donald Folsom.*

6817. ANONYMOUS. **Research in agriculture.** Nature 115: 73-75. 1925.—This is a leading editorial reviewing the reports of work in Britain. The necessity of improvement of lands on an economic basis is stressed and some suggestions are made as to variety trials.—*O. A. Stevens.*

6818. ANONYMOUS. **Rosellakultur in Paraguay.** [Roselle growing in Paraguay.] Tropenpflanzer 24: 156. 1921.—On account of the shortage of fiber-material in Paraguay, fiber is made from *Hibiscus subdariffa*; thus far, 60-80 tons have been produced.—*J. C. Th. Uphof.*

6819. ANONYMOUS. **The agricultural and forest resources of Gambia.** Bull. Imp. Inst. 22: 471-485. 1924.—This, the smallest and oldest of Britain's West African possessions, is described as to its geography and history. Its agricultural possibilities are discussed, and a list is given of its more important timber trees.—*L. A. Kenoyer.*

6820. ANONYMOUS. **The preparation of cane for milling.** South African Sugar Jour. 9: 29, 31. 1925.—Evolution of the apparatus used for preparing cane for milling is briefly sketched; some data regarding revolving knives, crushers, and shredders and results obtained from improvements in them are given. The cane should be cut into short pieces which will feed properly into a grinding plant, and this can be done by 2 sets of closely-spaced knives revolving at high speed or by a Krajewski crusher having rollers preferably the same size as the mill rollers. The further preparation of the cane may be completed by a Searby Shredder or by the tearing, differential rubbing of a deep-grooved intermeshing crusher or crushers. Best results are obtained by a 3-roller crusher.—*Nellie E. Fealy.*

6821. ANONYMOUS. **Tobacco growing in Ireland. The experiments in 1923.** Jour. Dept. Agric. Ireland 24: 52-56. 1924.—The effects of various factors on the crop are given. The yield ranged from less than 700 to about 1600 pounds of dry packed tobacco.—*Donald Folsom.*

6822. ANONYMOUS. [Rev. of: TANNOCK, DAVID. **Potato growing in New Zealand.** Whitcombe and Tombs, Ltd.: Auckland, Melbourne, London, 1922.] Gard. Chron. III. 73: 129. 1923.—"This is a small and unpretentious book on the subject of potato growing in garden and field; and contains a number of photographic reproductions. . . . The practical part of the book on cultivation, manures, tools for garden and field, are quite orthodox and correct." The author "has produced a readable and useful book on the potato."—*Frederick V. Rand.*

6823. ALTSON, R. A. **Report on the Ninth West Indian Agricultural Conference, and an account of a visit to Jamaica, Costa Rica and Trinidad.** British Guiana Combined Court No. 49. 1-16. The Argosy Co.: Georgetown, Demerara, 1924.—The agricultural situation relative to the principal crops, their culture, diseases and pests, and the status of agricultural investigations in these areas are discussed.—*Frederick V. Rand.*

6824. AMES, C. T. **Report from Holly Springs Branch Experiment Station for 1922.** Mississippi Agric. Exp. Sta. Bull. 211. 1-16. Pl. 3. 1922.—This is a report of variety tests with cotton, corn, and sweet potatoes; of fertilizer and spacing tests with cotton and sweet potatoes, and of recommendations in each case; and a discussion of soybean varieties.—*J. F. O'Kelly.*

6825. ANDERS, C. B. **Report from Raymond Branch Experiment Station for 1920-1922.** Mississippi Agric. Exp. Sta. Bull. 213. 1-8. 1922.—This is a report of variety tests with cotton, corn, and tomatoes on the brown and yellow loam soils of west central Mississippi; of a cotton fertilizer test in which stable manure and acid phosphate produced the greatest gains; and of a tomato fertilizer test in which an 8-4-6 fertilizer produced the greatest total yield.—*J. F. O'Kelly.*

6826. AYRES, W. E. **Cotton experiments, 1922.** Mississippi Agric. Exp. Sta. Bull. 215. 1-14. 1923.—Variety tests covering many points in the delta section of the state are reported. A test comparing different rates of nitrate of soda gave increases of 8.4, 16.4, 26.1, 27.3, 32.8, and 31.7% where nitrate of soda was used at the rate of 50, 100, 150, 200, 250, and 300 pounds to the acre, respectively. A test comparing the time of applying nitrate of soda gave results which favored applications after hoeing as against those before planting. Spacing the plants 8 and 12 inches in the drill gave better yields than wider spacing. Early thinning gave better results than delayed thinning. Topping decreased the yield.—*J. F. O'Kelly.*

6827. B., C. A. **Sugar cane cultivation in Mauritius.** Internat. Sugar Jour. 27: 18-22. 1925.—The Dutch are said to have introduced sugar cane into Mauritius from Java in 1650, but it did not become established. In 1747 the French Governor reintroduced sugar cane and the 1st sugar factory was erected 9 years later, or in 1756. When the British obtained final possession in 1814, however, only 4,000 tons of sugar were produced annually. Beginning in 1825 great development took place and increased rapidly until, in 1855, the production reached 120,000 tons. After the 40 succeeding years, during which there was little change, another forward movement began which arrived about 20 years ago, at the present level of more than 200,000 tons per annum. In 1827 there were 162 factories and in 1855 there were 227. Although from that time the tonnage of sugar has increased, the number of factories have decreased, there being but 171 in 1875, 104 in 1892, 66 in 1908, and about 50 at the present time.—*Nellie E. Fealy.*

6828. BAUPEL, OTTO. **Staubförmige Saatgutbeizen in America.** [The dust treatment of seed in America.] Mitteil. Deutsch. Landw. Ges. 40: 245-247. 1925.—The author confines himself almost entirely to a review of the literature on the subject of seed disinfection by means of fungicidal dusts. Particularly does he review the work of W. W. MACKIE and F. N. BRIGGS [California Agric. Exp. Sta. Bull. 364. (See Bot. Absts. 13, Entry 2785.)], E. C. STAKMAN and E. B. LAMBERT [Minnesota Agric. Exp. Sta. Special Bull. 70], and F. D. HEALD and L. J. SMITH [Washington State Agric. Exp. Sta. Bull. 171. (See Bot. Absts. 14, Entry 4579.)]. He brings out the fact that such experimental work as has been conducted in America and Australia has established the popularity of copper carbonate and has shown that certain other fungicidal dusts, while less effective smut preventives than formaldehyde and copper sulphate, do not injure the seed. The average farmer prefers the simpler, less arduous method of dusting to that involving the making and application of solutions.—*H. B. Humphrey.*

6829. BESSEY, E. A. **Weeds of the Michigan sugar beet area.** Facts about Sugar 18: 419-420. 1924.—A description of common weeds, including Canada thistle, quack grass, horse nettle, sow thistle, nut grass and bindweed, is given, with a short discussion of control methods.—*C. W. Edgerton.*

6830. BOERGER, ALBERTO, AUN GUSTAVO FISCHER. **El Problema agrícola de la República Oriental del Uruguay.** [The agricultural problem of the Eastern Republic of Uruguay.] 115 p. National Press: Montevideo, 1922.—Chapter I was prepared by BOERGER and Chapter II by FISCHER, Director and Technical Assistant, respectively, of the Phototechnical Institute "La Estanzuela." Boerger discusses the relative importance of the livestock and agricultural industries, "the two sources of national wealth." Wheat is the principal agricultural product. An acreage of 394,949 ha. with an average yield of 900 kg. per ha. was reported for

the year 1917-1918, the largest acreage and highest yield produced during the period 1901-1921 inclusive. Uruguay's wheat production is given as about 0.2% of the total world production, or about $\frac{1}{5}$ that of Argentina. The value of the entire agricultural production for the year 1917-1918 is valued at less than 20% of that of livestock. Tables are given showing the acreages and yields of wheat, corn, flax, oats, barley, canary-seed, and rye, for the years 1901-1921 inclusive.—Fischer discusses soils, the use of fertilizers, irrigation, cultivation by motor power, insect pests and diseases, and methods of disinfecting seed to kill *Ustilago*. The importance of using good seed is emphasized. The results of studies and experiments with cereals are presented in tables and graphs.—*Erma Brown*.

6831. BROWN, B. A. **Spacing of potato hills.** Storrs [Connecticut] Agric. Exp. Sta. Bull. 119. 143-151. 1924.—In each of 3 years potatoes of 3 varieties have been spaced in rows 3 feet apart at distances ranging from 6 to 20 inches, and yields taken. As distance between the hills diminishes, the yield increases but the percentage of number one's decreases. A spacing ranging from 9 to 12 inches is best.—*Henry Dorsey*.

6832. BROWN, B. A. **Summer annuals for hay in Connecticut.** Storrs [Connecticut] Agric. Exp. Sta. Bull. 120. 155-172. 1924.—For 3 years Sudan grass and several varieties of millet and soybeans have been grown in comparison. Yield data and the nutrient yield derived by chemical analysis are given. Japanese millet has produced most hay while the soybeans are far ahead in the production of protein. The millets are highest in fiber. Sudan grass stands between the soybeans and Japanese millet in yield. Japanese millet and soybeans were grown in mixture, as were Sudan grass and soybeans, with yields usually between the yields of the 2 alone. Feeding observations indicate the soybeans to excel in palatability. The acre cost of seeding each crop is given.—*Henry Dorsey*.

6833. BROWN, H. B. **Cotton spacing.** Mississippi Agric. Exp. Sta. Bull. 212. 1-16. 1922.—A summary is given of all cotton spacing work from 1888 to 1922 and of results in single stalk culture. The conclusions are reached that close spacing is most profitable and that nothing is to be gained by delayed thinning which is used in the "single stalk cotton culture" method once advocated by O. F. Cook and others.—*J. F. O'Kelly*.

6834. BROWN, W. ROBERTSON. **Kikuyu (*Pennisetum clandestinum*): a new pasture grass for India.** Agric. Jour. India 19: 32-34. 1 pl. 1924.—Experiments at Peshawar with this grass have been very successful. The author considers that it is worth a trial in any part of India where the average annual rainfall exceeds 20 inches or irrigation is available. It is a nutritious grass for dairy cattle, and is suitable for wide sweeps of lawn or for race courses.—*A. Howard*.

6835. BROWN, W. ROBERTSON. **The Mesquite (*Prosopis juliflora*).** Agric. Jour. India 18: 596-598. 2 pl. 1923.—The advantages of mesquite for covering arid land is emphasized. It is only necessary to establish a small nucleus plantation, as sheep and goats readily eat the beans (but not the leaves) and disseminate the seed in their dung.—*A. Howard*.

6836. BURT, B. C. **Future development of cotton-growing in India.** Agric. Jour. India 19: 356-368. 1924.—The author shows that it is unlikely that the area under cotton can be increased except at the expense of other crops. Higher agricultural yields of all crops and a higher agricultural efficiency all round is required for the production of an increased amount of cotton. Attention is drawn to the successful introduction of Karunganni cotton in Tinnevely, of Punjab-American in the Canal Colonies of the Punjab, of Cambodia cotton in Madras and to the work of the Indian Central Cotton Committee.—*A. Howard*.

6837. [BUSHINSKII, V. P.] БУШИНСКИЙ, В. П. **Природные условия роста "чмя" (*Lasiagrostis splendens* Kunth.) и возможность в ведения его в культуру.** [Natural conditions of the growth of "Tshee" (*Lasiagrostis splendens* Kunth.) and the possibility of introducing its cultivation.] (English summary.) Труды по прикладной Ботанике и селекции. [Bull. Appl. Bot. and Plantbreed.] 13²: 255-268. 1922-1923 [1924].—Experiments were made to test the possibility of an introduction of *Lasiagrostis splendens* into dry and arid regions of the steppes having a poor and salty soil. Experiments showed that with its deep roots this plant can utilize the water from deeper layers of earth. Cultivation of "Tshee" is not recommended because of its very poor feeding quality. The plant is not considered desirable, because it propagates very rapidly and soon becomes a weed, eliminating other more desirable plants.—*M. Demerec*.

6838. CAFFERY, J. M. **The sugar situation in Louisiana.** Facts about sugar 19: 206-207. 1924.—An attempt is made to analyze the causes for poor cane yields in Louisiana in 1923 and 1924. The writer considers a number of factors which may be of importance including: (1) bad seasons; (2) loss of soil fertility; (3) inadequate drainage; (4) degeneracy of native canes; (5) improper fertilization; (6) cane borers; (7) root-rot; and (8) mosaic disease. Selection of good, healthy cane from the best varieties for seed and improving cultivation and fertilization, are advocated.—*E. C. Tims.*

6839. CALVINO, EVA MAMELI. **The Jeswiet method for the identification of sugar-cane varieties.** Internat. Sugar Jour. 27: 22-25. 1925.—The author enumerates the basic observations of the Jeswiet method, first described in 1916 and adopted as a criterion by the International Congress of Sugar Experts at its meeting in Honolulu, August 1924. She makes a critical analysis of the method and refers to its limited application.—*Nellie E. Fealy.*

6840. CANNEY, ERNEST EVERETT. **Rain-grown cotton and climate.** (British Cotton Indust. Res. Assoc. (Jour. Textile Inst. 15: T 533-542. 2 maps. 1924.—The general conception of suitable climatic conditions for a rainfall crop of cotton is discussed, and it is suggested that excessive rainfall and cloudiness, and insufficiency of sunshine, especially during the maturation period, are worth as much consideration as adequate water supply and warmth. While undoubtedly limiting the outlook from one point of view, it is, however, indicated that the acreage in more suitable climates is probably at least as large again as the total present acreage under rainfall cotton. Though any conclusions are subject to certain legitimate objections arising from the inherent difficulties in broad surveys of this type, it is thought that a fair approximation to the possible future cotton map is depicted on Map 2, subject to the altitude modifications discussed. Three pages of references are given.—*From Author's Summary.*

6841. CLAYTON, E. S., ET AL. **Farmers' experiment plots. Wheat, oat, and barley experiments, 1924.** Agric. Gaz. New South Wales 36: 153-174. 6 fig. 1925.—Trials were conducted in the southern, northwestern, and northern districts and upon 41 private farms in the Murrumbidgee irrigation areas. Favorable yields were generally secured. The maximum yield of 54 bushels per acre was secured from the Cleveland variety in the northwestern district. Yields generally in this district were probably the heaviest ever recorded. A rate-of-seeding trial indicated that the usual seeding of about 60 pounds per acre can be increased to advantage $\frac{1}{2}$ on manured and early and well-worked fallow. This is particularly true with good moisture conditions. Flag smut caused damage, particularly upon the fields where stubble had not been burned. Cultural details are given for nearly all farms.—*L. R. Waldron.*

6842. DAVIDSON, W. D. **Early potato-growing.** Jour. Dept. Lands and Agric. [Ireland] 24: 243-247. 1924.—General recommendations are given.—*Donald Folsom.*

6843. DAVIN, ADELAIDE G., AND G. O. SEARLE. **A botanical study of the flax plant. IV. The inheritance and inter-relationship of the principal plant characters.** (British Cotton Indust. Res. Assoc.) Jour. Textile Inst. 16³: T 61-82. 1925.—The results of an investigation, extending over four years, of some of the more important characters of the flax plant from the point of view of fiber yield are described. The discussion is based for the most part on extensive correlation data. It is shown that variations in flower color, length of unbranched part of the stem, the percentage of fiber as measured by area in the cross section through the centre of the stem, and the relative earliness of flowering are all strongly inherited, and that probably the same is true of the number of seed in the capsule. A number of other characteristics have also been studied and their inter-relationships investigated; these include the number of capsules, the number of seed, the thickness of the stem, the degree of tillering, the area of the cross section of the stem, the number of ultimate fibers and their size, and the number of fibers per square millimeter of the stem area. The paper is illustrated with diagrams and with photomicrographs of cross sections of flax stems. Numerous correlation coefficients and other data referred to in the text are given in a series of 17 tables.—*From Author's Summary.*

6844. DOBBS, A. C. **A potentially useful diagnostic character in rape.** Agric. Jour. India 19: 196. 1924.—Among the ordinary types of rape at Ranchi a few plants with a very distinctive yellow green color and without any bloom were found. This type is as vigorous as

the common types, but the seed is smaller and yellow. The utility of a character like bloom in differentiating different types and in estimating the amount of natural cross-fertilization is emphasized.—*A. Howard*.

6845. DREW, J. P. The growing of crops for silage, and some experimental results. Jour. Dept. Lands and Agric. [Ireland] 24: 228-236. 1924.—In a mixture of beans, oats, peas and vetches (1923-1924) there was excessive lodging, and the peas were crowded out. Streak, a bacterial disease (*B. Lathyri*) of beans, was accentuated by a repetition of beans for several years in the same soil. A leguminous predominance in the mixture increases soil fertility. Clay served as a covering of the silage.—*Donald Folsom*.

6846. DUSSERRE, C. Influence de la fumure phosphatée et potassique sur la composition chimique du fourrage de prairies naturelles. [Influence of phosphatic and potassic manures upon the chemical composition of forage in natural meadows.] Ann. Sci. Agron. Française et Etrangère 40: 73-76. 1923.—Yields and chemical composition of the forage of natural meadows of high altitudes are reported for a 3-year period. Data submitted indicate increases both in total yield of forage and in percentage of crude protein and phosphorus compounds. The phosphorus compounds were found to consist largely (55-74%) of mineral compounds soluble in cold 1% HCl and to a lesser extent of nucleo-proteids (20-40%) and phosphatides (5-9%). The importance of these phosphorus compounds in animal nutrition is discussed and the conclusion drawn that phosphatic and potassic fertilizers applied to meadows permit better utilization of soil, energy of insolation and other growth factors in the production of nutritive substances.—*A. B. Beaumont and O. E. Street*.

6847. FEHLINGER, H. Brasilianische Faserpflanzen. [Brazilian fiber plants.] Tropenpflanzer 24: 173-176. 1921.—Piasava fibers are derived from *Leopoldina piassaba* Wall. and *Attalia funifera* Mart. They are but little exported. Twice a year the fibers are gathered from the hairy rind of the wild plants by a kind of comb. Five to ten pounds are harvested from a tree. After harvesting, the rind is placed in water in order that the worthless plant tissues may be removed; the remaining fibers are cleaned, combed and sorted. They are 2.5-5 m. long. The longest fibers are used for sails.—*Fourcroya gigantea* Vent. produces pitura fiber which is found everywhere in Brazil. It can be grown on different soils, under various conditions, but requires special care. Fibers can be harvested from 4 to 6 year-old plants. They usually attain an age of 12-16 years. The best fibers come from 4 to 8 year-old plants. One plant produces 40 leaves, 1 leaf gives about 40 gm. of fiber. One laborer cuts daily by hand 2000-2500 leaves.—*Urena lobata* L., a shrub, produces fibers 2-3 m. long, from which sacs are made.—Also, fiber is produced from *Sida rhombifolia* L., *S. cordifolia* and *Ananas sagenaria* Schult.—*J. C. Th. Uphof*.

6848. FEHLINGER, M. Die Landwirtschaft der Malayischen Staaten. [Agriculture in the Malayan States.] Tropenpflanzer 24: 129-132. 1921.—General agricultural conditions are given of the various Malayan States. Cacao growing is very extensive in the peninsula; many of the products are exported. Coffee (*robusta*) is but little grown. Tapioca, gambier and areca nut are exported to some extent. The forests produce gutta-percha, jelutong (an inferior gum), wood oil and lumber. Rice growing is of great importance although there is not enough produced for home demand.—*J. C. Th. Uphof*.

6849. GHOSH, D. N. Crop-reporting in India. Agric. Jour. India 19: 460-472. 1924.—The framing of an estimate of the out-turn of a crop depends on 3 factors—the area, the standard normal out-turn per acre and the condition estimate. Defects in the system are due to the inexperience of the village officials. It is suggested that crop-cutting experiments should be more systematically carried out and that unofficial agencies should be utilized to check the primary estimates of condition from the villagers. A summary is given of the methods employed in foreign countries.—*A. Howard*.

6850. GOLDTHWAITE, CHARLES F. Bast fibres as substitutes for cotton. Textile World 67¹¹: 39-42; 67¹³: 43-49. 1925.—The bast fibers, flax, hemp and jute are considered. There are 4 unsolved problems: (1) growing the plants and preparing the fiber economically; (2) manufacturing, including spinning and weaving; (3) bleaching and finishing; (4) merchandizing. Jute is discarded because it is very difficult to bleach and finish this lignified fiber. Seed flax is inferior to fiber flax for fiber production, but the limited production of fiber flax in

this country is not very promising. Hemp fiber is regarded as most promising, for it is more nearly like flax and it may be produced in quantity at low cost. Chemical retting has not been commercially successful heretofore, and even water-retted flax or hemp fibers are more difficult and expensive to bleach than cotton. The uneven lengths of the ultimate cells in any of the bast fibers will interfere with their economic use as cottonized fibers.—*L. H. Dewey.*

6851. GOULDING, ERNEST. **The present position of sisal hemp cultivation with special reference to the British Empire.** Bull. Imp. Inst. 22: 39-55. 1924.—This paper was presented at a Conference held in connection with the Sixth International Exhibition of Rubber, Other Tropical Products and Allied Industries, Brussels, April, 1924.—The name, "sisal," is now usually restricted to the product of *Agave sisalana* Perr. The product of *Agave fourcroydes* Lem. is called "Henequen" or "Mexican sisal."—The sisal plant has been introduced into nearly all of the tropical or semi tropical British Colonies. The fiber is now produced on an extensive scale in Kenya, Tanganyika and the Bahamas, and plantations are established in Ceylon, Nyasaland, Gold Coast, Mauritius, and Jamaica. A detailed statement is given of the progress of the industry in each of the British colonies.—*L. H. Dewey.*

6852. HALDEN, G. H. **Juice strainers, juice heaters, settling tanks, the Petree-Door process, and the Kopke clarifier.** Internat. Sugar Jour. 27: 42-45. 1925.—The author briefly sketches the mechanical evolution in some of the sugar mills in the Philippines, gives fragmentary descriptions of the various apparatus mentioned above, results achieved and methods of achievement, and makes some suggestions for possible improvements and additional utilizations.—*Nellie E. Fealy.*

6853. HOWARD, A. **An improved method of lucerne cultivation. II.** Agric. Jour. India 19: 276-279. 1924.—An improved intensive method of growing lucerne on beds is described with full details of the comparative yields obtained throughout the year from this system and from the normal system (growth on ridges). A good indigenous seed-supply is necessary before lucerne can be widely introduced into the rural economy of India. In many places in India lucerne does not seed. Preliminary experiments indicate that the fertilization of the flower is limited by temperature. Well-developed pollen grains are formed in the hottest weather but they do not germinate unless they are artificially cooled.—*A. Howard.*

6854. HOWARD, A., AND G. L. C. HOWARD. **The continuous growth of Java indigo in Pusa soil.** Agric. Jour. India 19: 607-612. 1 fig. 1924.—The decline in indigo cultivation and the occurrence of indigo wilt in Bihar have been ascribed by some observers to a deficiency of phosphate in the soil. The general rural economy of this tract does not support the theory of phosphate depletion. A crucial experiment was devised to test the point. Indigo was grown continuously for 5 years in a lysimeter $\frac{1}{1000}$ of an acre in area with a depth of soil of 28.5 inches. In spite of the fact that no phosphate was added, the yield was greatest in the 5th year. It was found that the rate of growth diminished each year as soon as the permeability of the soil was impaired by rainfall and colloids were formed.—Preliminary experiments had showed that in the rainy season sulphur and sulphuric acid markedly increased growth and acted like nitrogenous manures. It is suggested that the good effect obtained with green manure and superphosphate is due to superphosphate affecting the colloids by acting as a dilute acid in the process of reversion in the calcareous soils of Bihar. *A. Howard.*

6855. HOWARD, G. L. C., AND ABDUR RAHMAN KHAN. **Studies in Indian oil seeds. No. 2. Linseed.** Mem. Dept. Agric. India Bot. Ser. 12: 135-183. 3 pl., 1 fig. 1924.—In India, the 2nd largest source of the world's supply of linseed oil, this crop is entirely grown for oil. This paper contains a classification of the indigenous types based on single plant cultures studied during several years at Pusa. Color of seed, of corolla, of anthers, filaments and styles and size of seed were used to distinguish the varieties. Size of flowers, breadth of petal, details of the coloring of the filaments and style, time of maturity, method of branching and height of plant were used to distinguish the unit species. Twenty-five new varieties (*luteum*, *lutescens*, *indicum*, *cyaneum*, *purpureum*, *albidum*, *album*, *alboceruleum*, *officinale*, *bengalense*, *agreste*, *meridionale*, *gangeticum*, *laxum*, *præcox*, *pratense*, *minor*, *herbaceum*, *pulchrum*, *cæsius*, *bicolor*, *commune*, *campestre*, *vulgatum*, *tinctorium* and *sativum*) and 123 unit species are described. Full details of the method of pollination under Indian conditions are

given. Cross-fertilization in the field occurs only to a limited extent. There is a direct relation between the root-systems of the types of linseed cultivated in any area and the soil type. Small plot experiments on the effect of aeration and organic matter on the growth were carried out for several years. The addition of aerating material caused a small increase in the height and in the number of branches which was roughly the same as the effect produced by the addition of sodium nitrate at the rate of 448 pounds to the acre. The latter, however, has a much greater effect on the yield of seed. The addition of 30% of leaf-mold produced an increase of 30% in the height, 100% in the number of basal branches and 250% in the weight of the seed. The phenomenon of secondary flowering is described. In the concluding chapter the factors necessary for an economic improvement in the crop are discussed. The seed of 3 improved types giving large yields on the alluvium (Type 121, Type 12 & Type 29) has been distributed to cultivators.—*A. Howard*.

6856. HUTTON, J. H. **Some economic plants of the Naga Hills.** *Agric. Jour. India* 18: 567-571. 1923.—An account is given of the plants used for fiber, nets, cloth and string by the primitive tribes of the range of hills separating Assam from Burma.—*A. Howard*.

6857. IMPERIAL INSTITUTE, DIRECTOR. **Baking qualities of Mesopotamian wheat.** *Bull. Imp. Inst.* 22: 284-292. 1924.—Tests show that the flours made from Mesopotamian wheats vary in their behavior in bread-making, and are on the whole comparable with flours from the Indian wheats. They might well be used for mixing with the more valuable Manitoba or Australian wheats.—*L. A. Kenoyer*.

6858. JONES, D. F., W. L. SLATE, JR., AND B. A. BROWN. **Corn in Connecticut.** *Connecticut [Storrs] Agric. Exp. Sta. Bull.* 124: 309-396. 1924.—Reported elsewhere as Connecticut [New Haven] *Agric. Exp. Sta. Bull.* 259. (See next entry.)

6859. JONES, D. F., W. L. SLATE, JR., AND B. A. BROWN. **Corn in Connecticut.** *Connecticut [New Haven] Agric. Exp. Sta. Bull.* 259: 383-470. 1924.—Almost 150 different varieties of flint and dent corn were grown at Mt. Carmel and at Storrs in comparison both of yield and character of growth. The varieties are described and a history of each is given. There is given the source of the variety, its color, maturity, yield and rank. Yields of both grain and silage are given. The time of testing varies from 1 to 8 years at the 2 places. Some years flint varieties led in yield while in other dents excelled. When flints with the same length of growing season as dents are compared for yield the dents lead in yield, on the average, at Storrs by 7.9% and at Mt. Carmel by 10.5%. On the average, dent varieties require a longer growing season and yield more grain and stover. Many of the varieties have been grown continuously on the same farm for 40 to more than 100 years without diminution in yielding power. The color was not an index for yielding ability. The state is divided into 5 districts and varieties both for grain and silage are recommended for each.—*Henry Dorsey*.

6860. JØRGENSEN, C. O. **Almindelig Rajgræs efter Vinteren 1923-24.** [*Lolium perenne* after the winter of 1923-1924.] *Jydsk Landbrug [Aarhus]* 6: 391-396. 1924.—During a very severe winter, *Lolium perenne* and *Holcus lanatus* have been completely killed in many perennial pastures. In the future *Lolium perenne* should be reduced from 16-20 kg. per ha. to 8-12 kg., and should be replaced with *Poa pratensis*, *Phleum pratense*, *Poa trivialis* and *Festuca pratensis*.—*Ernst Gram*.

6861. JOSHI, P. G. **Rice growing in the Konkan without transplanting.** *Agric. Jour. India* 19: 160-163. 2 fig. 1924.—By the use of 2 special implements, a field marker and planter, and a weeder, a better yield of rice at a lower cost can be obtained than by transplanting.—*A. Howard*.

6862. KASINATH, S. **The practical aspect of the top to bottom ratio in ripening tests of the sugarcane.** *Jour. Madras Agric. Students Union* 12: 269-271. 1924.—The theory previously advanced [see Bot. Absts. 13, Entry 5642] namely, the ripening of sugarcane joint by joint and the usefulness of the ratio of the total solids in the top half of the cane to that of its bottom half, is reiterated and its applicability to field conditions is shown by experimental evidence.—*P. S. Jivanna Rao*.

6863. KRISHNAMURTHI RAO, K. **A short note on soil temperature and cane germination.** *Jour. Madras Agric. Students Union* 12: 18. 1924.—The author holds that for germination of sugarcane sets, temperatures above 44°C. are not quite suitable.—*P. S. Jivanna Rao*.

6864. KULKARNI, G. S. The cultivation of potato in Italy. Agric. Jour. India 18: 599-603. 1923.—Potato cultivation in the Bombay Deccan and to some extent in Madras and Mysore is dependent on the importation of Italian seed tubers. The method of cultivating the potato in the Campania is described and the freedom of the potato crop from fungus and insect pests in Italy is emphasized. The belief that the potato moth (*Phthorimea operculella*) was introduced into India on the Italian potato appears doubtful as the moth has never been recorded in Italy.—Wart, mosaic and leaf-roll diseases are said not to occur in Italy but degeneration, which is a symptom of disease, exists and necessitates periodic replenishment of the seed from the hill tracts.—A. Howard.

6865. KURUP, N. K. B. Short notes on the fibrous plants of Travancore. 26 p. Government Press: Trivandrum, 1924.—Travancore possesses many plants yielding fibers most of which are unknown outside of the state. None are cultivated except sunn (*Crotalaria* sp.). Brief notes are given on 30 different species arranged by families, chiefly species belonging to the Leguminosae, Tiliaceae, Malvaceae and Sterculiaceae. Somewhat longer notes are given on 10 species of special interest, including the introduced *Yucca gloriosa*, and *Agave cantala* which is misnamed *A. Americana*. A list of 92 species is given with Latin, vernacular, and family names, arranged in groups in the order of their importance from the point of availability. The only fibers in the list known in commerce are kitul from *Caryota urens*, Palmyra from *Borassus flabellifer*, coir from *Cocos nucifera*, sunn from *Crotalaria juncea*, and cantala from *Agave cantala*.—L. H. Dewey.

6866. LINES, STERLING C. Cane production in Sinaloa. Facts about sugar 18: 467-468. 1924.—The good crops in Sinaloa, Mexico, are said to be due to proper irrigation at the right time rather than to any peculiar soil or climatic condition. Canes grown at a higher altitude show a higher sucrose content than those grown along the coast.—C. W. Edgerton.

6867. LORD, LESLIE. Irrigated paddy: A contribution to the study of field plot technique. Agric. Jour. India. 19: 20-27. 3 pl. 1924.—The following results were obtained from a series of experiments undertaken with a pure line, Ngasein paddy. Under irrigation, the yields of plots parallel to the water-course tend to increase as the water-course is approached. The probable error of a series is only slightly affected by the distribution of plots in more than one embanked field.—Six replications with "Students" method (see Jour. Agric. Sci. 4². 1911) modified in the manner suggested in this paper reduce the probable error to below $\pm 2\%$. The probable error obtained by using total weights is only slightly higher than when grain weights are used.—A. Howard.

6868. MAIN, T. F. The future of cotton-growing in Sind under perennial irrigation. Agric. Jour. India 19: 473-484. 1 pl. 1924.—The new Lloyd barrage irrigation scheme is estimated to increase the annually cultivated area in British India and Khairpur State by 6 million acres; of this about 1 million acres may eventually be under cotton. The conditions for cotton-growing in Sind will be entirely altered. There are favorable prospects of obtaining a long staple but any improved cotton must be (1) prolific to enable it to compete with the existing strains, (2) hardy to withstand the severe hot winds of April and May, (3) resistant to alkali and (4) early, as all irrigation for cotton will cease in September and October.—A. Howard.

6869. [MALTSEV, A. I.] Мальцев, А. И. Brassica dissecta Boiss., как специальный сорняк посевов льна на Юге России. [Brassica dissecta Boiss. as a special weed of the flax sowings in the South of Russia.] (With English summary.) Труды по прикладной Ботанике и селекции [Bull. Appl. Bot. and Plantbreed.] 13²: 277-278. 1922-1923 [1924].—The author describes *Brassica dissecta* as a weed in the flax cultures of South Russia. Because of its similarity to flax in regard to the shape of its seed and its life cycle it is not easy to separate it from the flax cultures.—M. Demerec.

6870. MILLER, M. F. Agronomic science and increased production. Jour. Amer. Soc. Agron. 16: 756-767. 1924.—Presidential address.—F. M. Schertz.

6871. MITRA, S. K. Seasonal variation in paddy. Agric. Jour. India 19: 590-599. 5 fig. 1924.—Measurements during 3 years (1920-1922) were made on 2 classes of rice—"sail" or early sown and "aus" or late sown paddy. The flowering of "sail" (early sown) paddy occurs at a definite time of the year irrespective of the date of sowing, whereas the flowering

of "aus" takes place after a definite number of days. The author finds that the growth and yield of rice plants varies with the distribution of the rainfall and that flowering, tillering and height are related to yield.—*A. Howard.*

6872. MONSON, C. J. The prospects for tobacco cultivation in Kenya. *Bull. Imp. Inst.* 22: 33-38. 1924.—Attempts to grow tobacco in Kenya have largely been given up because the growers did not understand the specialized procedure necessary to grow a high grade product, and because of the prevalence of diseases and insect pests. The forest soil of the experimental farm of the Dept. of Agric. in Kabete is too rich for tobacco, but there should be a future for the crop in parts of the colony where the soil is light.—*L. A. Kenoyer.*

6873. MORRIS, E. A. M. Agriculture in the Irish Free State and in Denmark. *Jour. Dept. Agric. Ireland* 24: 3-7. 1924.—The agronomic and trade systems, the areas and populations, and the predominance of agriculture, especially in exports, are similar for the 2 countries. However, the Irish system is less highly developed, being based on grass rather than on tillage and requiring too many agricultural imports.—*Donald Folsom.*

6874. O'KELLY, J. F., AND ROWLAND COWART. Cotton experiments, 1923. *Mississippi Agric. Exp. Sta. Bull.* 219. 1-12. 1923.—Variety tests covering 5 years show greater yields of lint cotton for vigorous growing short staple types, while as a rule the money value per acre is slightly greater for the types with longer staple. Nitrate of soda increased the yield more than ammonium sulphate and both were slightly more effective than calcium cyanamid. Boll weevil poisoning by the government dusting method was unusually effective due to a season favorable for weevil propagation.—*J. F. O'Kelly.*

6875. OSBORN, E. H. Field assistant's reports. Lower Burdekin. *Australian Sugar Jour.* 26: 737, 739. 1925.—The principal varieties of cane grown in the Burdekin are B. 208, N.G.15 (Badila), H.G.426 (Clark's Seedling), M.1900, Goru, S. Singapore, and Q.813. All give good returns on particular soils.—*Nellie E. Fealy.*

6876. PACK, DEAN A. The storage of sugar beets. *Facts about Sugar* 19: 178-180, 208-209, 232-233, 235, 251-253. 1924.—Sugar beet storage losses in the U. S. A. range from 5 to 60%. The loss of reserve material in the stored beet is due to respiration, growth, and other metabolic processes. These metabolic processes are largely dependent upon moisture, temperature and oxygen supply. Experimentation indicates that the best range of temperature for sugar beet storage is between 1.7 and 1.0°C. The loss in weight of storage beets is proportional to the decreased vapor pressure of the surrounding materials. To prevent loss of weight some water-holding material must be placed in contact with the beet. Analyses show that beets lose sugar during storage, more being lost under dry than under wet storage. The amount of sugar lost during storage can be reduced greatly by controlling moisture and temperature conditions.—*E. C. Tims.*

6877. PARR, P. H. The mechanical theory of sugar boiling and curing. *Internat. Sugar Jour.* 27: 36-41. 1925.—This is the 1st part of a work based mainly on a consideration of whether it is practicable to separate a massecuite of given purity into sugar and molasses of other given purities.—*Nellie E. Fealy.*

6878. PEARSON, RAYMOND A. The better adaptation of educational and investigational effort to the agricultural situation. *Science* 61: 217-221. 1925.—This address recommends that a thorough study be made of the problem of fitting the work of the institutions that educate for agriculture to the needs of the times and the future. The 1st epoch of American agriculture was characterized by diversified production. In the 2nd epoch the tendency was to quantity production that was aided by research and education. The 3rd epoch that is just opening will be concerned with good business methods that insure a high-class permanent agriculture. Nine reasons are given for the change from quantity production. The new epoch should be backed by the 5 essentials: (1) Good business methods, (2) maintenance of fertility, (3) good homes and surroundings, (4) fair legislation, and (5) patriotic citizenship.—*C. J. Lyon.*

6879. PIERCE, ANNE. Condersport and cooperation. *Field Illus.* 35: 20-22. *Fig. 5.* 1925.—This is a news article concerning cooperative organizations of potato growers at Condersport, Pennsylvania, and discussing some of the results of storage under different conditions. Illustrations given show superior condition in spring of sack-stored potatoes compared with those stored loose in the bin.—*H. O. Werner.*

6880. PITT, J. M. **Farmers' experiment plots. Maize experiments, 1923-24.** Agric. Gaz. New South Wales 36: 195-198. 1925.—Trials were conducted upon 15 private farms with a considerable number of varieties. Distinctly higher yields were secured from the main crop varieties. The maximum yield of 134 bushels per acre was secured from the variety Pride of Hawkesbury. Manurial trials at Barrington showed equal parts of superphosphate and bone dust to give an increase in yield of yearly 40%, or 30 bushels, in comparison with a non-manured plot, upon comparatively rich soil.—*L. R. Waldron.*

6881. Q., H. **A ratooning plough.** ["Cairns Post."] Australian Sugar Jour. 26: 688-689. 1925.—The ratooning plough is described in detail. "Taken as a whole the plough is so very close to success" that it is believed it will not be long before it will be so perfected as to satisfy the most critical.—*Nellie E. Fealy.*

6882. RAUM, HANS. **Die Wiesenunkräuter und Ihre Bekämpfung.** [Meadow weeds and their control.] 41 p. 8 col. pl., 4 fig. Datterer & Co.: München, 1923.—This book is designed to aid the small farmer in his war against meadow weeds. The chief weeds of meadow lands are described and such means for their destruction as have been easiest of practical application are suggested.—*Author (translated).*

6883. [REGL, R.] Ререць, Р. **Химический анализ двух разновидностей Бекмании.** [Chemical analysis of two varieties of *Bechmannia*.] (German summary.) Труды по прикладной ботанике и селекции [Bull. Appl. Bot. and Plantbreed.] 13²: 279-281. 1922-1923 [1924].—The author considers *Bechmannia cruciformis* Host., which can be grown on marshy peat meadows, to be a grass high in feeding value. A table gives the data of the chemical analysis of 2 varieties of *Bechmannia*.—*M. Demerec.*

6884. REYNOLDS, MARK H., A. N. SHEPHERD, AND R. N. MAKIN. **Farmers' experiment plots. Winter green fodder experiments, 1924.** Agric. Gaz. New South Wales 36: 179-188. 1925.—Experiments were conducted upon 21 private farms in the northern district, along the south coast, and upon the Murrumbidgee irrigation areas. In general, oats and vetches sown together gave larger yields than the cereals, oats, wheat, barley and rye sown alone, or barley or wheat sown with vetches. Detailed cultural and crop results are given in nearly all cases.—*L. R. Waldron.*

6885. SAMPSON, H. C. **A popular account of the Madras Agricultural Department.** vi + 125 p. Depart. Agric.: Madras, 1922.—The book deals with the work done by the scientific officers at the Agricultural College and Research Institute, Coimbatore, by the Curator of the Botanic Gardens at the Nilgiris and by the Deputy Directors in charge of the 8 circles and of the Planting Districts. The nature of the improvements effected on crops and the money values for these have been scheduled. A list of leaflets, bulletins, articles and memoirs written by the officers of the Department since 1906 is included.—*P. S. Jivanna Rao.*

6886. SANKARAN PILLAI, K. **Tobacco in Guntur District.** Jour. Madras Agric. Students Union 12: 45-52. 1924.—Virginian tobacco is grown with success in Guntur, a part of the Madras Presidency where the climatic and soil conditions are well suited for the crop. Details of cultivation, manuring and curing are given.—*P. S. Jivanna Rao.*

6887. SARKAR, B. N. **On the probable error in variety trials with paddy.** Agric. Jour. India 18: 475-486. 2 pl. 1923.—Examples are given showing that variation in the fertility of the land may so affect the yield of *Oryza sativa* as to vitiate the results of comparative variety trials. A large part of the probable error may be due to this cause. The effect of this variation can be reduced to a minimum (1) by reducing the distance between the centres of experimental plots to 4 feet, (2) comparing only adjacent plots and (3) by looking at the results in detail instead of taking the mean. As it is not always possible to compare adjacent plots, the author describes 2 methods of calculating the normal fertility curve for any piece of land.—*A. Howard.*

6888. SAYER, WYNNE. **Mill trials of Coimbatore sugarcane seedlings 232 and 233.** Agric. Jour. India 19: 385-388. 1924.—The trials were vitiated by the fact that these early ripening canes were over-ripe when crushed. Co232 behaves better in the mill than Co233 but neither is very desirable from the factory point of view. Co232 is a fairly tall, straight-growing, early ripening cane with good sucrose content. Further trials are necessary to determine whether in a normal season a better purity and a good yield can be obtained in Bihar.—*A. Howard.*

6889. SAYER, W. **Selected Coimbatore canes in growers' fields in North Bihar.** Agric. Jour. India 19: 493-499. 1 pl. 1924.—In spite of an unfavorable monsoon 3 Coimbatore seedlings Co210, Co213 and Co214, showed their superiority over the local canes. Co213 is preferred by the growers and by the sugar factories as a general utility cane. A large quantity of seed cane has been distributed in North Bihar. Ratooning experiments were fairly successful with Co210 and Co214 but failed completely with Co213. The experiments require repetition in a year of normal rainfall.—A. Howard.

6890. SCHANTZ, MORITZ **Baumwollanbau im belgischen Kongo.** [Cotton growing in the Belgian Congo.] Tropenpflanzer 24: 49-52. 1921.—Areas along the Upper Congo and such places where a regular rainy period is followed by 3 or 4 months of drought, which guarantees a good ripening and drying harvest are best adapted to cotton raising. The best varieties for this region are Triumph Big Ball and Simkins Early Prolific. Natives are being taught cotton growing and their harvests are bought at a certain price.—J. C. Th. Uphof.

6891. SCHANTZ, MORITZ. **Baumwollanbau in französischen Kolonien.** [Cotton growing in French colonies.] Tropenpflanzer 24: 72-73. 1921.—Cotton raising in Sudan, Ivory Coast, Dahomey, Algeria, New Caledonia and New Hebrides is briefly reviewed.—J. C. Th. Uphof.

6892. SCHMIDT, GEO. A. **Die Henequen- oder Sisal-Kultur in Yucatan.** [Henequen growing in Yucatan.] Tropenpflanzer 24: 88-93. 1921.—Sisal hemp or henequen growing from *Agave rigida* (*A. fourcroydes* Lem.) is very important in Mexico. The principal varieties grown in Yucatan are *A. rigida elongata* (*A. fourcroydes* Lem.) and *A. sisalana*. This state possesses 900,000 ha. (1920) planted with this crop, of which 225,000 ha. are ready for harvest. The distance of plants on double rows is 1 m., the double rows being at 3 m. The first leaves are cut 5-7 years after planting; 15-20 years is the duration of the plantation on which leaves are harvested. Production on the best plantations is 1100 kgm. of fiber per ha. per annum. No crop rotation is practised. In Yucatan the fiber is not washed. It is dried and bleached by the sun. The machines used are more or less after the patent "Prieto." The leaves are harvested throughout the year. Products derived from the fiber, factories, labor conditions, etc., are described.—J. C. Th. Uphof.

6893. SEWELL, M. C., AND L. E. MELCHERS. **The effect of rotation and tillage on foot-rot of wheat in Kansas, 1920-1924.** Jour. Amer. Soc. Agron. 16: 768-771. 1924.—Wheat grown in rotation has not been damaged by foot rot. Foot-rot of wheat may occur in fields cropped continuously to wheat where the best tillage method for wheat production is practised. The continuity of long time experiments based on continuous wheat culture may be interrupted by foot-rot.—F. M. Schertz.

6894. SHAMMEL, A. D. **Improvement of cane varieties by bud selection.** Louisiana Planter and Sugar Manuf. 72: 73-75. 1924.—The author takes his material from the report of the committee in charge of the Exp. Sta. of the Hawaiian Sugar Planters Assoc.—E. C. Tims.

6895. STENING, H. C. **Further trials with wheats from South Australia.** Agric. Gaz. New South Wales 36: 188. 1925.—Hay and grain yields of 6 hybrid wheats secured from crossing Gresley and King's White are shown. The variety Sultan produced the best results.—L. R. Waldron.

6896. [STOLETOVA, E. A.] Столетова, Е. А. **Ботанический анализ сорных элементов в посевном зерне крестьянских хозяйств Саратовской гуо.** [Weed elements in the seed material of the province of Saratov.] (English summary.) Труды по прекладной ботанике и селекции [Bull. Appl. Bot. and Plantbreed.] 13: 283-353. 1922-1923 [1924].—The results of the analysis made at the Station for Seed-testing, Saratov, were compiled into tables which show the frequency with which the seed of different weeds occur in cultivated crops.—M. Demerec.

6897. STUBBS, WM. C. **Factors limiting sugar yields in Louisiana.** Facts about Sugar 18: 466. 1924.—Drainage and cultivation are important factors but favorable climatic conditions are also essential for a maximum yield. Varieties resistant to certain troubles are important but as yet such satisfactory varieties are not known.—C. W. Edgerton.

6898. SUMMERS, FREDERICK. **The quality of ratooned Queensland cotton.** (British Cotton Indust. Res. Assoc.) Jour. Textile Inst. 15: T 543-546. 1924.—The advantages and disadvantages of ratooning are discussed from the horticulturist's point of view. A com-

parison is described between a sample of Queensland cotton grown from seed and a sample grown under the same conditions from plants which had been ratooned at the end of the previous season. In the case investigated, the conclusion drawn is that the quality of the ratooned cotton is inferior to that of the normal product. It is not suggested, however, that ratooning should be condemned without more evidence from other parts of the world.—*Author's abstract.*

6899. TAGGART, W. G. *Melilotus indica* on fall plant sugar cane. Louisiana Agric. Exp. Sta. Bull. 189. 1-11. 1923.—Data are given to show that *Melilotus indica* planted on "fall plant" sugar cane as a winter cover crop, increased the yield of cane substantially and helped to keep down obnoxious grass and weeds.—*E. C. Tims.*

6900. [TUMIN, G.] Тумин, Г. Изменение урожайности в пределах черноземной области. [Variation of productivity of crops (yield) within the range of the black soil region (chernozem) in Russia.] (English summary.) Труды по прикладной ботанике и селекции [Bull. Appl. Bot. and Plantbreed.] 13²: 493-501. 1 fig. 1922-1923. [1924].—This paper is accompanied by a chart which shows graphically the depth of different layers of soil in several places in the black soil region. The amount of humus in the soil and the depth of the black soil is greatest in the center, decreasing toward the north and south. The reason for this decrease toward the south is on account of unfavorable conditions for vegetative growth due to drought. The author believes the reason for the decrease toward the north to be the strongly outwashed "podzol" of the forest region which borders the black soil region.—*M. Demerec.*

6901. UPHOF, J. C. TH. Luzernezüchtung in subtropischen semi-ariden Gegenden. [Plant breeding in subtropical semi-arid regions.] Tropenpflanzer 24: 169-173. 1921.—Alfalfa is the most important farm crop for semi-arid regions. Thousands of acres are planted with this crop in California, Arizona and New Mexico. Plants may resist as much as 1% of white alkali, although young plants are less resistant. About 0.05-0.1% of black alkali makes plant growth impossible. Seed are sown from September until May. A special plan should be developed to determine the relationship of climatic and moisture conditions to the various strains. Rate of transpiration of the various types, leaf surface, succulency and yield per certain number of plants or per certain areas are necessary considerations in this crop improvement. In comparative tests the Peruvian alfalfa proved to be the best. Tables on meteorology and yields of some of the types are given.—*Author.*

6902. VENKATRAMAN, T. S., AND R. THOMAS. Simple contrivances for studying root-development in agricultural crops. Agric. Jour. India 19: 509-514. 4 pl. 1924.—Large flower pots are formed by placing several earthenware rings above one another, the floor of each ring being formed of wire netting. These pots are buried in a trench and when required for examination the earth in the trench is dug out, a plank is inserted below the column of rings and the whole is lifted into a wooden frame. The wire netting floors are fastened to this frame and the earth is removed by washing. By this arrangement the roots are easily photographed in situ. A method of growing sugar cane sets in cheap earthen cooking pots is also described. It is claimed that the porosity of the pots removes any need for aeration and that evaporation keeps the temperature sufficiently low to prevent damage from high temperatures. Fully developed canes have been grown in this manner.—*A. Howard.*

6903. WEIR, W. W. Pumping for drainage in the San Joaquin Valley, California. California Agric. Exp. Sta. Bull. 382. 3-38. 1925.—Drainage of irrigated lands by means of pumping from deep wells, first undertaken in a comprehensive way in the Salt River Valley of Arizona in 1918, met with such success in that region that it is being undertaken rather extensively in the San Joaquin Valley of California. The South San Joaquin, Modesto, Turlock and Merced Irrigation districts, have each installed a series of deep well pumps which will be operated for the primary purpose of lowering the water table and improving drainage conditions. Success may be expected where the surface water is directly connected with, and where a part of the normal ground water and pervious strata can be found from which relatively large quantities of water can be pumped. The only other essential is the installation of pumps of large enough capacity to deplete the underground supply sufficiently to cause the water table to recede to the desired level. The feasibility of this method of lowering the water table has been repeatedly shown in those parts of California where the irrigation supply is

obtained by pumping. Two general plans are found in the San Joaquin Valley, one exemplified by the installations at Merced and the other by those at Turlock. The Merced installations are generally of a larger type with deeper and larger wells and greater drawdown than those at Turlock. At Merced the desire is to lower the general water table, while at Turlock a local lowering only is desired. The cost of drainage by this method compares favorably with that of any other method yet tried, though the cost of operation is more. Over a period of years the cost of the 2 methods may not be very different. More effective drainage may be accomplished by pumping than by tile or open drains because of the flexibility of the pumping system, and the greater depth to which it is economically feasible to lower the water table. The pumped water is readily available for irrigation and compensates in part for the cost of drainage by this method. Utilization of water from tile or open drains entails additional cost and is not a common practice. The ultimate and complete solution of the drainage problem in the San Joaquin Valley probably lies in the use of all the underground waters which can be economically pumped for irrigation and used on areas not now irrigated.—*A. R. C. Haas*.

6904. WRIGHT, WALTER P. *A book about potatoes and other vegetables*. 164 p. 20 pl. Headley Bros.: London, 1918.—“ . . . the potato is . . . a national standby of great, indeed almost vital, importance. . . . The present book about potatoes is the work of one who in 1903 founded the National Potato Society of Great Britain. . . . Let us see to it that we utilize to the full, by the application of scientific knowledge, all the gifts of this remarkable plant, alike in our gardens, our factories, and our laboratories.”—The 1st section of the handbook includes the following subject matter: interesting facts about potatoes; the plant as we grow it; potatoes on grass land, on waste land, in small and large gardens, on the farm and on the small holding; intensive and rotation culture; potato varieties; soils and manures; seed and sets, raising new varieties; culture methods; diseases; lifting and storing; exhibition; and potato cookery.—Section II discusses more briefly other important vegetables.—*Frederick V. Rand*.

6905. ZADE. *Neuzeitliche Methoden der Futterpflanzenzüchtung*. [Modern methods of breeding forage plants.] Mitteil. Deutsch. Landw. Ges. 40: 296–301. 1925.—Attention is called to the importance of improving forage crops and the difficulties in the way of self-sterility. Details of methods which were worked out for beets and alfalfa are given. The isolation of a strain of beet homozygous for color was accomplished by sowing 200 seed of each of 2000 to 3000 individual beets. A few of the strains proved to have beets all of one color and these were taken to be homozygous. It is suggested that the same or a similar method can be used with clovers, alfalfas and grasses. Diagrams are given of an isolation cage for clover, a schematic representation of the root system of white clover and of *Poa pratensis* and fruits of wild and of cultivated strains of *Avena elatior*. Tables are presented showing the differences in percentage of stem, blade and inflorescence as well as chemical composition of various parts. The following species are considered in one or more of these tables: *Dactylis glomerata*, *Arrhenatherum elatius* (Glatthafer) *Lolium perenne* (Lembkès Deutsches Weidelgras) *Trifolium pratense*, *Medicago sativa*.—*A. J. Pieters*.

6906. [ZAITSEV, G. S.] Зайцев Г. С. *Разновидности кунжута (Sesamum indicum L.) разводимого в Туркестане*. [Varieties of *Sesamum indicum* L. cultivated in Turkestan.] (English summary.) Труды по прикладной ботанике и селекции. [Bull. Appl. Bot. and Plantbreed.] 13: 371–389. 1922–1923 [1924].—This paper, which is regarded by the author as a preliminary one, gives a classification of different varieties of *Sesamum indicum* L. found in Turkestan.—*M. Demerec*.

SOIL SCIENCE (EDAPHOLOGY)

6907. ADINARAYANA RAO, K. *The soil of abandoned plantations*. Jour. Madras Agric. Students Union 12: 193–198. 1924.—Bacteria contributing to soil fertility were found plentifully in a soil sample from the abandoned estates of Mysore but they do not function, owing to the acidity of the soil and deficiency in lime. This may be remedied by the application of lime in suitable quantities.—*P. S. Jivanna Rao*.

6908. BUCKLEY, A. B. *Mesopotamia as a country for future development*. 26 p. 3 maps. Ministry of Public Works, Govt. Press; Cairo, Egypt, 1919.—The author describes the state of

the existing irrigation works in Mesopotamia and the possibilities for future development. An appendix gives results on varietal test of cotton at the Baghdad Experiment Farm, in 1918.—*T. D. Rice.*

6909. COVILLE, F. V. **The agricultural use of acid peats.** Jour. Amer. Peat Soc. 18: 5-8. Pl. 1-4. 1925.—Cranberries, blueberries, rhododendrons, mountain laurel (*Kalmia latifolia*), and trailing arbutus (*Epigaea repens*) thrive on acid peat. Onions, celery and lettuce thrive best on non-acid peat. It is proposed to use the name peat for acid decaying vegetable matter and the name muck for such as is non-acid. Work is quoted showing that rhododendrons grow well on ordinary garden soil acidulated with aluminum sulphate.—*G. B. Rigg.*

6910. DYKE, W. **Manures and fertilizers.** Edited by T. W. SANDERS, 142 p. W. H. & L. Collingridge: London, 1924.—This handbook is designed to give information on the nature and composition of manures and fertilizers, expressed in simple language. Fertilizer formulae are given for many garden and greenhouse plants.—*T. D. Rice.*

6911. G., C. T. [Rev. of: BEAR, FIRMAN E. **Soil management.** (Wiley Agric. Ser.) vi + 268 p. J. Wiley and Sons: New York; Chapman and Hall: London, 1924.] Nature 115: 152. 1925.—The reviewer thinks the book may be a little too advanced for the students for whom it is intended.—*O. A. Stevens.*

6912. G., C. T. [Rev. of: MILLER, MERRITT F. **The soil and its management.** vi + 386 p. Ginn & Co.: Boston, London, 1924 (see Bot. Absts. 13, Entry 5478).] Nature 115: 115. 1924.—This is a good elementary text.—*O. A. Stevens.*

6913. GUSTAFSON, A. F. **Fallen trees a cause of hummock formation.** Jour. Amer. Soc. Agron. 16: 782-787. 1924.—The presence of logs and stumps, along with freezing and thawing and trampling of livestock, is an important factor in hummock formation.—*F. M. Schertz.*

6914. GUSTAFSON, A. F. **The use of standard soils with the potassium thiocyanate test for estimating lime requirement of soils.** Jour. Amer. Soc. Agron. 16: 772-776. 1924.—The practicability of the method is discussed.—*F. M. Schertz.*

6915. HAGER, G. **Zur Aziditätsbestimmung der Mineralböden.** [The acidity determination of mineral soils.] Zeitschr. Pflanzenernähr. u. Düngung 4: 159-177. 1925.—Aqueous, KCl and molar sodium acetate extracts were tested according to the method described by Wherry and the results are tabulated.—*F. M. Schertz.*

6916. HALL, A. D. **Fertilizers and Manures** 376 p. 9 fig. Dutton & Co.: New York, 1920.—This book is a rather complete treatise on this subject. The introductory chapter takes up briefly the history of the use of manures and the early theories of plant nutrition. It is pointed out that experiments for the most part indicate that soils can usually supply the elements necessary to the plant in sufficient quantities, except in the case of nitrogen, phosphorus and potassium. Then follow several chapters devoted to a discussion of these elements, each element being taken up separately. The main points discussed are early history, including the various factors which led up to their use; the various forms in which these elements are available; and the manner in which they have been formed either through natural or artificial means. In the case of each element a chapter or part of a chapter is devoted to a discussion of the effect of the fertilizer on crop yields; character of plant growth; composition of the more important crops; and the residual effect, both physical and otherwise, on the soil.—In a chapter on farmyard manure the writer treats such subjects as composition, emphasizing especially the variability in the different manures and the causes; duration of action; losses of fertilizer nitrogen during the making; farmyard manure as a carrier of weeds or disease; and the physical effects upon the soil and value of manure for applying to grass lands and root crops.—Miscellaneous or mixed fertilizers discussed include Peruvian guano, fish guano, meat guano, dried blood and cake residues. One chapter is devoted to what is termed materials of indirect fertilizing value, such as marrow, chalk, lime, gypsum, salt, iron sulphate, etc., in which the writer discusses the need for those various materials and the effect on the plant growth. In this chapter green manuring is discussed very briefly.—In a chapter headed "Theories of fertilizer action," the writer takes up various theories regarding the part played by soil in the nutrition of crops, solubility of fertilizers in soil water, fertilizing constituents in soil water, the soil diffusion of fertilizers in soil and excretions from plant roots, particularly

the various theories regarding toxic substance excreted by the roots. It is shown that rotation is valuable and important and cannot entirely replace fertilizers. One chapter is devoted to a rather detailed discussion of the best fertilizers for each of several leading farm crops and the best time and method of applying them. Valuable hints are given for determining the value of fertilizers in different forms and suggestions are given for purchasing. The importance of chemical analyses is stressed. In the final chapter the importance of experiments to determine the true value of any fertilizer is emphasized. Under this heading are discussed such factors as experimental error; choice of lands for plots; arrangement of plots; and application of fertilizers. All through the book numerous tables are used based on the results obtained chiefly at Rothamsted and used by the writer to illustrate the various points that he attempts to make.—*H. L. Westover.*

6917. HALL, A. D. *The soil: An introduction to the scientific study of the growth of crops.* 3rd ed. xv + 352 p. John Murray: London, 1920.—This is the 3rd revised and enlarged edition of this book. In the sections dealing with the chemical and physical properties of the soil, unpublished measurements and observations have been incorporated. The author also has found it necessary to modify and revise this edition to include the results of research during recent years, particularly with reference to the knowledge of soil organisms and their function, and the structure of clay and the soil reactions in which the clay takes part as developed by the present conception of colloids.—*T. D. Rice.*

6918. KÖNIG, J., AND J. HASENBÄUMER. *Die Ermittlung des Düngungsbedürfnisses des Bodens.* [Ascertaining the fertilizer requirements of the soil.] *Zeitschr. Pflanzenernähr. u. Düngung* 3: 497-532. 1924.—Relations between the fertilizer content of the soil and that of the harvest are tabulated.—*F. M. Schertz.*

6919. NIKLAS, H. *Untersuchungen über Bleichsand- und Orterdebildungen in Wald-boden.* [Investigations of the formation of "bleached sand" and hardpan in forest soils.] *Forstwiss. Centralbl.* 46: 632-636. 1924.—The leaching out of the surface layers and formation of an impervious stratum below the surface frequently occur on light sandy soils poor in lime and plant foods, where raw humus is present. This process is hard to detect by superficial observation in its incipency, although even then it seriously reduces the production of timber. Analyses show that the hardpan is much richer in Fe_2O_3 , Al_2O_3 , K_2O , P_2O_5 , and SiO_2 than the soil above it. The early stages of the process can be detected by measuring the soil acidity, and can be combatted by stirring and loosening the soil mechanically, by applying quick-lime, or by silvicultural measures such as gradually thinning dense stands or developing a denser cover in open stands, and thereby breaking up the raw humus or preventing its formation.—With heavier soils, a layer of raw humus tends to result in the formation of a "podsol" layer near the surface, which is also deficient in plant food, compared with the subsoil.—*W. N. Sparhawk.*

6920. NOLTE, O. *Neutralsalzersetzung durch Kieselsäure.* [Decomposition of neutral salt by silicic acid.] *Zeitschr. Pflanzenernähr. u. Düngung* 4: 191-192. 1925.—This is a reply to W. HUMMELCHEN and H. KAPPEN.—*F. M. Schertz.*

6921. QUEENSLAND, DIRECTOR OF THE SUGAR EXPERIMENT STATION. *Cultivation and manuring. Potash for cane on red soils.* *Australian Sugar Jour.* 26: 757. 1925.—The application of 300 pounds of sulphate or muriate of potash to the red soils of the Woongarra District, Bundaberg, which some years ago showed in places as low as 13 pounds of available potash per acre, resulted in an average yield per acre of 22.43 tons of cane from plant 1st and 2nd ratoon crops, while the yield from plots to which no potash was applied was only 8.37 tons per acre. The cost of the potash at the rate of 300 pounds per acre was only £3, while the revenue from the 14 extra tons per acre resulting from the use of the potash would be about £31/10/-. Other similarly fertilized plots gave a yield of 20.29 tons per acre, while the plots receiving no potash gave only 10.28 tons per acre, or an increase of 10.01 on the fertilized plots. Plots treated with 600 pounds per acre of mixed fertilizer containing 100 pounds each of sulphate of ammonia, nitrate of soda, and muriate of potash, and 300 pounds of superphosphate generally gave better results than the single elements, but in the red soils, where the potash is so low, the potash alone gave a yield of 3.14 tons per acre over the mixed fertilizer.—*Nellie E. Fealy.*

6922. RIGG, G. B. **The utilization of sphagnum bogs on the northwest coast.** Jour. Amer. Peat Soc. 18: 9-12. 1925.—Seventy-eight coastal bogs in Oregon, Washington and Alaska were visited. The depth of the organic matter in the different bogs varies from 1 foot to more than 31 feet. The substrata on which the various bogs rest are glacial till, blue clay, sand, gravel, rock, and soil formed in situ. The utilization of these bogs is largely for growing cranberries. Utilization for other purposes is mentioned briefly as are also methods of bringing bogs into cultivation. The special weed problems encountered in the utilization of these bogs are discussed. The possible utilization of some bogs for the growth of birch forests is considered.—*G. B. Rigg.*

6923. WORTHEN, E. L. **A common error in interpreting financial returns from fertilizer experiments.** Jour. Amer. Soc. Agron. 16: 776-781. 1924.—The more profitable of 2 fertilizers, differing in cost, cannot be ascertained from the results of a single comparison of an equal rate of application of the 2. Comparisons based on percentage return on the investment favor the less expensive of the 2 treatments, while the common comparison based on net value of crops is generally in favor of the more expensive treatment.—*F. M. Schertz.*

BIBLIOGRAPHY, BIOGRAPHY AND HISTORY

CARROLL W. DODGE, *Editor*

CHARLES A. WEATHERBY, *Assistant Editor*

(See also in this issue Entries 6827, 6835, 6950, 6951, 6985, 7056, 7110, 7148, 7150, 7162, 7179, 7225, 7260, 7301, 7341, 7359, 7417, 7455)

6924. ANONYMOUS. **Naturalists' journeys in Hainan Island.** China Jour. Sci. and Arts 2: 233-234. 1924.—Reference is made to an account of a journey by Malcom A. Smith (Jour. Nat. Hist. Soc. Siam 12: 1923) and to the visits of F. A. McClure of Canton Christian College in 1921 and 1922 (Lingnaam Agric. Rev. 1: 1922). R. H. Douglas of the Chinese Customs Service is mentioned as the first European to cross the Island.—*Albert N. Steward.*

6925. ANONYMOUS. **The Botanic Garden, Copenhagen.** [Rev. of: OSTENFELD, C. H. *Botanisk Have gennem 50 Aar, 1874-1924. (Botanical garden through 50 years.)* 101 p. G. E. C. Gads Forlag; København, 1924.] Nature 115: 210. 1925. (See also Bot. Absts. 14, Entry 6154.)

6926. ANONYMOUS. **William Watson.** Nature 115: 271-272. 1925.—William Watson who died January 30, was born near Liverpool on March 13, 1858. He was curator of the Royal Botanic Gardens at Kew from 1901 to 1922. He was a leading authority on tropical and subtropical plants and made important contributions to knowledge of palms, cacti, rhododendrons, azaleas and orchids.—*O. A. Stevens.*

6927. BEAUCHAMP, WM. M. **Pursh's journal 1807.** 119 p. Onondaga Hist. Assoc.: Syracuse, New York, 1923.—This unnumbered publication consists of the following parts: (1) An exact reprint of "Journal of a botanical excursion in the northeastern parts of the States of Pennsylvania and New York during the year of 1807 by Frederick Pursh, Philadelphia, Pa. Brinckloe & Marot, Printers, 1869;" (2) notes on Pursh's journal; (3) Onondaga Indian names of trees, plants, and flowers; (4) Onondaga and Oswego plants found by Pursh in 1807, names as used now; (5) the Onondaga flora; (6) tribute to Lucy Leonora Goodrich; (7) general index.—*L. H. Pennington.*

6928. BERLIN-DAHLEM HÖHEREN GÄRTNERLEHRANSTALT. **Denkschrift zum 100 jährigen Bestehen der Höheren Gärtnerlehranstalt Berlin-Dahlem früher Wildpark.** [Memorial to the Centenary of the Horticultural College, Berlin-Dahlem, formerly Wildpark.] 307 + 236 + 5 p. 61 illus. (1 col.). Trowitzsch und Sohn: Frankfurt (Oder), 1924.—The earlier sections of this memorial volume give the history and description of the institution, together with its organization, curricula and equipment. Then follow contributions by members of the staff: SPACH, L., and WERNER MAGNUS. *Die Aufgaben, einer Deutschen Gartenbau-Hochschule.* [The problems of a German horticultural college.] P. 162-184.—HEINE, E. *Allgemeines und Grundsätzliches zur gärtnerischen Fachbildung.* [Generalities and fundamentals of horticultural training.] P. 185-188.—JANGE, WILLY. *Ein Gartensprach mit*

Willem van Vloten. [A horticultural conversation with Willem van Vloten.] *P.* 189-213.—ENCKE, FRITZ. Ein Volkspark. [A recreation park.] *P.* 214-225.—KUPHALDT, D. Gehölzstieffkinder in der Gartenkunst. [Neglected woody plants in horticulture.] *P.* 226-237.—BARTH, E. Ein Gartentheater nach griechischer Art im Volkspark Jungfernheide Charlottenburg. [A Greek garden theatre in the recreation park, Jungfernheide, Charlottenburg.] *P.* 238-245.—MAASS, HARRY. Einiges vom Wesentlichen im Garten, von Raum und Pflanze. [A few essentials of the garden—space and plants.] *P.* 246-249.—KACHE. Die Presse im Dienst unseres Berufes. [The press in the service of our profession.] *P.* 250-255.—KOCHS. Die Wert unserer Gemüsekost von Abteilungsvorsteher. [The food value of our vegetables.] *P.* 256-263.—HEYDEMANN, F. Wo stehen wir heute im einheimischen Obstbau und was erstreben wir? Ein zusammenfassender Rückblick und Ausblick. [Where do we stand today in our domestic fruit culture and to what do we aspire? A concise retrospect and prospect.] *P.* 264-273.—GRAEBNER. Ueber einige Pflanzenkrankheiten des ungewöhnlichen Sommers 1923 und des folgenden Winters. [Plant diseases of the unusual summer of 1923 and the following winter.] *P.* 274-277.—KOCHS. Das Klima von Dahlem. [The climate of Dahlem.] *P.* 278-281.—DERMER, FRANZ. Die höhere Gärtner lehranstalt Dahlem in ihrer Bedeutung für den deutschen Erwerbsgartenbau. [The horticultural college in its relation to German commercial horticulture.] *P.* 282-285.—WEISS. Das erste Jahrzehnt der "Vereinigung ehemaliger Wildpark-Dahlem" 1890-1900. [The first decade of the "Vereinigung ehemaliger Wildpark-Dahlem," 1890-1900.] *P.* 286-292.—These articles are followed by a discussion of the administration and teaching body of the institution, with its objects and terms of admission.—A supplement of 236 pages lists the former students, both chronologically and alphabetically.—*Frederick V. Rand.*

6929. BRITISH ASSOCIATION ADVANCEMENT SCIENCE COMMITTEE. *Handbook of Canada.* 499 p. *Fig. 1-54, map.* Univ. Toronto Press: Toronto, 1924.—This handbook was issued on the occasion of the meeting at Toronto, August 1924, and in addition to other Canadian information contains the following articles of interest to botanists: HARKIN, J. B. *Canada's National Parks.* *P.* 95-105.—STUPART, FREDERIC. *The climate of Canada.* *P.* 106-115.—McMURRICH, J. PLAYFAIR. *Scientific research in Canada.* *P.* 185-187.—LLOYD, FRANCIS E. *The vegetation of Canada.* *P.* 207-228.—GÜSSOW, H. T., AND J. H. FAULL. *Plant pathology in Canada.* *P.* 229-237.—HOWE, CLIFFORD E. *The forests and forest industries of Canada.* *P.* 238-252.—HUNTSMAN, A. G. *Oceanography.* *P.* 274-290.—ZAVITZ, C. A. *Field crops in Canada.* *P.* 303-307.—BULLER, A. H. REGINALD. *Wheat in the West.* *P.* 308-321.—MACOUN, W. T. *The fruit industry of Canada.* *P.* 326-339.—GIBSON, ARTHUR. *Economic entomology in Canada.* *P.* 340-345.—COLLINS, W. H. *The geology and physical geography of Canada.* *P.* 346-374.—COLEMAN, A. P. *Glacial features of Canada.* *P.* 375-379.—Bibliographies of these articles and an index complete the handbook.—*Frederick V. Rand.*

6930. ENDRES. Simon Rotmanner, der erste bayerische Forstschriftsteller. [Simon Rotmanner, the first Bavarian writer on forestry.] *Forstwiss. Centralbl.* 46: 597-611. 1924. Rotmanner (1740-1813), through his writings, played a prominent part in the movement which culminated in putting Bavarian forestry on a sound basis. Forestry had been subordinated to game propagation, and the forests were controlled by a corrupt, unorganized force of game wardens with no knowledge of forestry principles. As a result, largely, of Rotmanner's writing, a forest service was organized in 1789, and became effective in 1795. A forest school was established at Munich in 1790, but lasted only until 1806.—*W. N. Sparhawk.*

6931. GARREY, W. E. *Memorial of Jacques Loeb.* *Science* 61: 198. 1925.

6932. HARPER, ROLAND M. *Development of agriculture in lower Georgia from 1850 to 1880.* *Georgia Hist. Quart.* 6: 97-121. 1 map. 1922.—The author briefly summarizes the early writings which have served as his sources of material regarding the development of agriculture in the coastal plain region of Georgia, which comprises the lower $\frac{2}{3}$ of the State.—Lower Georgia is more diversified in soil but less so in topography than upper Georgia. The discussion covers the fall-line sand flats, the blue marl region, the red hills, the red lime lands, the lime-sink region, the rolling wire-grass country, the hammock belt, the Tallahassee red hills, the flat pine lands, and the coastal strip. Bearing these natural divisions in mind, the author analyses through text and tables the agricultural statistics of lower Georgia for the 10-year

periods: 1850-1860, 1860-1870, 1870-1880. (For a similar discussion of upper Georgia see *Ibid.*, preceding number).—*Frederick V. Rand.*

6933. KINGSLEY, J. S. **Louis Agassiz and "Darwinism."** *Science* 61: 234-235. 1925.—By means of quotations from men who knew and worked with Agassiz, it is shown that he would have espoused the cause of evolution had it not meant the reversal of the positions taken in his publications.—*C. J. Lyon.*

6934. KOFOID, CHARLES A. [Rev. of: MEISEL, MAX. *A bibliography of American natural history. The pioneer century, 1769-1865. Vol. 1. 244 p. Premier Publ. Co.: Brooklyn, New York, 1924 (see Bot. Absts. 14, Entry 3250).*] *Science* 61: 287-288. 1925.

6935. MOUTON, H. **Jacques Loeb, 1859-1924.** *Bull. Soc. Chim. Biol.* 7: 202-207. 1925.—An appreciation of Loeb's work.—*Joseph S. Caldwell.*

6936. PEARL, RAYMOND. [Rev. of: PEARSON, KARL. *The life, letters and labours of Francis Galton. Vol. 1. Birth 1822 to marriage 1853. xxiii + 246 p. 56 pl., 5 charts. Univ. Press: Cambridge, 1914. Vol. 2. Researches of middle life. xi + 425 p. 54 pl. Univ. Press: Cambridge, 1924.*] *Science* 61: 209-212. 1925.—A 3rd and possibly a 4th volume will follow.—*C. J. Lyon.*

6937. SAVAGE, S. **Early botanical painters.** *Gard. Chron.* III. 73: 8, *Fig. 4*; 92-93, *Fig. 45-46*; 148-149, *Fig. 71*; 200-201, *Fig. 90*; 260-261, *Fig. 121*; 336-337, *Fig. 161-162*. 1923.—The following are discussed in this series of articles: Jean Bourdichon, Jacques Le Moyne de Morgues, John White, Daniel Rabel, and "Painting in relation to the printed books."—*P. L. Ricker.*

6938. STEVENS, NEIL E. **Eunice Rockwood Oberly.** *Phytopathology* 15: 61-64. *Pl. 2*. 1925.—The paper includes a short biography with a portrait of Miss Oberly and an appreciation of her active service and cooperation as the Librarian for the Bureau of Plant Industry. The catalogues and indexes of botanical literature prepared in the library were, through her efforts, made available to workers outside of Washington. They were published in *Phytopathology* from 1914 to 1920 and since then as mimeographed sheets.—*B. B. Higgins.*

6939. STEVENS, NEIL E. **First award of the Eunice Rockwood Oberly Memorial Prize.** *Phytopathology* 15: 65-66. 1925.—The Eunice Rockwood Oberly Memorial Prize is to be awarded annually or biennially to the compiler of the best bibliography in the fields of agriculture or natural science. The fund is administered and the prizes are awarded by the American Library Association. The 1st award was made in December, 1924, to Max Meisel for his work, "A bibliography of American natural history."—*B. B. Higgins.*

6940. THOMPSON, J. ARTHUR. **Reminiscences of great naturalists.** [Rev. of: OSBORN, H. F. *Impressions of great naturalists: Reminiscences of Darwin, Huxley, Balfour, Cope and others. xxviii + 216 p. 12 pl. Chas. Scribner's Sons: New York, 1924.*] *Nature* 115: 184. 1925.

6941. TRUE, A. C. **Esino e pesquisas em agricultura e economia domestica nos Estados Unidos. Supplementa o material exposto pelo Servico das relações estadoaes na Exposição do centenário do Brasil, Rio de Janeiro, Brasil, 1922-1923.** [Education and research in agriculture and home economics in the U. S. A.] 47 p. Imprensa nacional: Washington, 1922. (*English ed. 45 p. 24 fig. 1923.*)—This publication contains a brief outline of the history of research and education in agriculture and home economics in the U. S. A. and summary statements regarding the organization and work of the Federal agencies (Bureau of Education, Federal Board for Vocational Education and U. S. A. Dept. Agric.) promoting such work, and of the agricultural experiment stations and colleges, secondary and elementary schools in which agriculture and home economics are taught. An account is also given of the cooperative extension work in agriculture and home economics carried on under the Smith-Lever Act of Congress of May 8, 1914.—*Author.*

6942. VAN AERDSCHOT, P. **Travaux publiés en Belgique ou par des botanistes belges en 1924.** [Works Published in Belgium or by Belgian botanists in 1924.] *Bull. Soc. Roy. Bot. Belgique* 57: 199-210. 1925.

BOTANICAL EDUCATION

C. STUART GAGER, *Editor*ARTHUR H. GRAVES, *Assistant Editor*

(See also in [this issue Entries 6878, 6925, 6928, 6930, 6941, 7046, 7048, 7069, 7101, 7123, 7132, 7138, 7147, 7273, 7412])

6943. ANONYMOUS. **Yenching University, Peking.** *China Jour. Sci. and Arts* 2: 192-195. 1924.—A discussion is given of the organization of this University, and particular mention is made of the instruction given in the departments of agriculture, sociology, leather manufacture, and education.—*Albert N. Steward.*

6944. ARTSCHWAGER, ERNST, AND EDWINA M. SMILEY. **Dictionary of botanical equivalents: German-English, Dutch-English, Italian-English.** 2nd ed. 124 p. Williams & Wilkins: Baltimore, 1925.—Dutch and Italian have been added to the scope of this dictionary, and also the French and German sections have been amplified. Changes have been made in the arrangement and in the type-page. Blank pages appended to each section give opportunity for notation of additions by the user.—*Frederick V. Rand.*

6945. BROWN, WILLIAM H. **A textbook of general botany.** xi + 484 p. *Illus.* Ginn & Co.: Boston, New York, etc., 1925.

6946. BROWN, WILLIAM H. **Laboratory botany.** xiv + 168 p. *Illus.* Ginn & Co.: Boston, New York, etc., 1925.

6947. CALIFORNIA STATE BOARD OF EDUCATION COMMITTEE. CAMPBELL, W. W. (CHAIRMAN) ET AL. **Evolution in education in California.** *Science* 61: 367-368. 1925.—This is the report of the committee of college and university presidents on the subject of evolution as treated by text-books in the schools. The teaching of the books is found to have treated evolution as a theory with due respect to the fundamental principles of religion.—*C. J. Lyon.*

6948. CHEEL, E. **Nature study and its value to the community.** *Australian Nat.* 5: 206-212. 1925.

6949. EMERSON, ALFRED [EDWARD]. **The jungle laboratory of tropical biology conducted by the University of Pittsburgh.** *Science* 61: 281. 1925.—Students of tropical biology may enroll in a summer course conducted at the Tropical Research Station of the New York Zoological Society located at Kartabo, British Guiana. The facilities of the station are open to scientists throughout the year.—*C. J. Lyon.*

6950. FISH, HAROLD DUFUR, HENRY HOMER COLLINS AND ALFRED EDWARD EMERSON, JR. **A brief course of six talks and bibliography on evolution and heredity.** 44 p. *Diagrs.* (Radio publ. 8.) Univ. Pittsburgh: Pittsburgh, Pennsylvania, 1924.

6951. FISH, HAROLD DUFUR, HENRY HOMER COLLINS AND ALFRED EDWARD EMERSON, JR. **An outline and bibliography on evolution and heredity.** 12 p. (Radio publ. 7.) Univ. Pittsburgh: Pittsburgh, Pennsylvania, 1924.

6952. HILL, A. V. **The present tendencies and methods of physiological teaching and research.** *Science* 61: 295-305. 1925.

6953. HOLMES, S. J., AND OTHERS. **The report of the committee on freedom of teaching in science.** *Science* 61: 276-277. 1925.

6954. LYON, CHARLES J. **The teaching of osmosis and its physiological functions.** *School Sci. and Math.* 25: 400-406. 1925.—Data have been collected concerning the teaching of osmosis and diffusion and their functions as forces in plant nutrition. There appears to be some difference of opinion as to the advisability of presenting osmosis as a phenomenon at all different from diffusion and much confusion in assigning to each its correct function in the entry and transmission of water and salts in land plants. The consideration of the problem concludes with an outline for teaching the student of botany the essential facts concerning the 2 processes and their functions in the handling of food materials, making osmosis to act by reason of diffusion and to move water, while simple diffusion moves the solutes.—*Author's summary.*

6955. MACRAE, LILLIAN. **Molds, mildews and bacteria.** *Gen. Sci. Quart.* 9: 156-157. 1925.—Instructions are given for demonstrating the growth of these organisms to inter-

mediate students, thus enabling them to understand the reason for many of the rules of hygiene and home economy.—*L. A. Kenoyer.*

6956. SALISBURY, E. J. **The biology of plants.** [Rev. of: SKENE, MACGREGOR. **The biology of flowering plants.** (Biological handbook series) xi + 523 p. 8 pl. Sidgwick and Jackson; London, 1924.] *Nature* 115: 9-10. 1924.—The book is especially physiological and results of research investigations have been presented. (See also Bot. Absts. 14, Entry 1171.) *O. A. Stevens.*

CYTOLOGY

GILBERT M. SMITH, *Editor*

(See also in this issue Entries 7154, 7155, 7164, 7195, 7196, 7244, 7266, 7267, 7476)

6957. CZURDA, V. [Rev. of: IKARI, J. **On the nuclear and cell division of a plankton-diatom Coscinodiscus subbulians** Jörgensen. *Bot. Mag. Tōkyō* 37: 96-108. 2 pl., 2 fig. 1923 (see Bot. Absts. 14, Entry 5122).] *Arch. Protistenk.* 49: 305-306. 1924.

6958. LO PRIORE, G. **Uni- e plurinuclearita in piante ed animali.** [Uninucleate and plurinucleate condition in plants and animals.] *Riv. Biol.* 6: 301-309. Fig. 1-3. 1924.—In connection with the discovery of multiple nuclei in pollen grains of *Araucaria*, reference is made to similar condition in animals, particularly radiolarians. Nuclear phenomena in members of the family Acanthometridae have been the subject of investigation by Hertwig, Porta, and others. In some species of Acanthometra 2 forms of individuals have been found: (1) very small, multinuclear forms in which the skeleton is lacking or incomplete; (2) uninuclear forms of considerable size with well-developed skeleton. The peculiar structure of the nucleus reported in *Amoebophrya acanthometrae* is said to be caused by a parasite. *Acanthometra claparedei* shows nuclei of 2 kinds: numerous small nuclei 5 μ in diameter, each containing a dark granule; and some of moderate size, 25-40 \times 10-15 μ , reniform, and composed of a more or less homogeneous mass which includes a stratum of deeply stained bodies. The origin of such nuclei has been attributed to gemmation, and to phenomena of parasitism and disorganization.—The author's studies have been based on pollen grains of *Araucaria Bidwillii*. The presence of multiple nuclei, first observed in the germinating pollen tube, was found to occur also in the microspore, even before maturity. Neither multiplication by gemmation while the nucleus was passing from the grain into the tube, nor disorganization of the nuclei such as has been observed in *Pinus* and *Taxus* was seen to take place. Close observation of the nuclei from their origin up to their distribution along the pollen tube, precludes the possibility of parasitism. Immature microspores of *Dammara robusta* have been found by Nicolosi to possess the same multinuclear character, while Thomson has discovered 6-7 nuclei in the pollen tube of *Agathis australis*. The hypothesis that the cellular and nuclear division of the microspore is of an antheridial nature is confirmed by comparison with specimens of the fossil *Cordaites*, and it seems very probable that in some archaic fossil forms allied to the Araucariae the multiple nuclei possessed a male reproductive function now completely lost.—*Edith K. Cash.*

ECOLOGY

GEO. D. FULLER, *Editor*

(See also in this issue Entries 6929, 7031, 7041, 7060, 7100, 7144, 7253, 7256, 7257, 7258, 7263, 7265, 7271, 7274, 7275, 7359, 7442, 7443, 7457, 7478, 7534, 7550, 7557, 7558, 7564, 7565)

GENERAL, FACTORS, MEASUREMENTS

6959. ARND, TH. **Die Humussäuren in ihrem Einflusse auf das mikrobeleben im Moorboden und die methoden der aziditätsbestimmung.** [The influence of humus acids upon microbic life in moor soil and methods of acidity determination.] *Zeitschr. Pflanzenernähr. u. Düngung* 4: 53-72. 1925.

6960. BLANCHET, G. H. **An exploration into the northern plains north and east of Great Slave Lake, including the source of the Coppermine River.** *Canadian Field Nat.* 39: 30-34.

1925.—A very general reference to vegetation and climate is included in this description.—*W. H. Emig.*

6961. BRAUN-BLANQUET, J. *Études sur la végétation méditerranéenne. III. Concentration en ions H et calcimétrie du sol de quelques associations de la garigue languedocienne.* [The vegetation of the Mediterranean region. III. H-ion concentration and calcium content of the soil of some garigue associations in southern France.] *Bull. Soc. Bot. France* 71: 639–647, 879–891. 1924.—The author regards the acidity of the soil, its calcium carbonate content and its colloidal properties, which largely determine its water holding capacity, as the chief factors influencing the vegetation of southern France (le midi). The H-ion concentrations were determined by colorimetric methods which are described. The grassy garigues (pelouses) include associations of (1) *Brachypodium ramosum* and *Phlomis Lychnitis*, (2) *B. phoenicoides*, (3) *Deschampsia media* and *Brunella hyssopifolia* and (4) *Schoenus nigricans* and *Inula viscosa*; and the shrubby garigues comprise associations of (1) *Rosmarinus* and *Lithospermum fruticosum*, (2) *Quercus coccifera*, (3) *Helianthemum hirtum* and *Onobrychis Caput-galli*, and (4) *Erica scoparia* and *Lavandula stoechas*. These associations, found about Montpellier, are described as to their development and their characteristic and accessory species. The H-ion concentration and CO₂ Ca content of these soils are determined. None of these communities is regarded as a climax association since the shrubby garigue is the result of man's long continued attack upon the ancient forest of *Quercus Ilex*, the real climax. An association of *Rosmarinus* and *Lithospermum* is also similarly studied. The H-ion content of the soils varies so little from neutral (pH7) that it seems necessary to abandon the idea of finding in it a means of classifying or even of distinguishing the associations of the calcareous garigue. The author intends to apply the same methods to associations on soil poor in calcium.—*J. Beauverie (translated).*

6962. DUNLOP, W. R. *Rainfall correlations in Trinidad.* *Nature* 115: 182–183. 1925.—Methods of study and the desirability of more analysis are discussed. Regions with 80 inches or more annual rainfall are less adapted for cacao than those with 70 to 75 inches.—*O. A. Stevens.*

6963. FOX, H. MUNRO. *The biology of the Suez Canal.* *Nature* 115: 262. 1925.—The return of the Cambridge expedition is noted, and some general notes on salinity are given.—*O. A. Stevens.*

6964. GATES, FRANK C. *Hemerarch and feralarch, two additional terms in ecology.* *Science* 61: 260. 1925.—The use of the prefix "hemer" as suggested by Harshberger leads to the term "hemerarch" to cover the series of successions taking place where the chief factor is the anthropic factor. The term "feralarch" is then needed to designate the series of natural origin.—*C. J. Lyon.*

6965. GUYOT, HENRY. *Le Valsorey. Esquisse de botanique géographique et écologique.* [Valsory: A phytogeographical and ecological sketch.] (Matériaux pour le levé géobotanique de la Suisse 8.) 155 p. Rascher & Cie: Zurich, 1920.—Valsorey, or Val Sorey of older authors, is a valley of 8 km. length situated in the canton of Valais, district of Entremont. After a brief survey of the orology, topography, geology and climate of the valley the various associations of the forest, scrub and grasslands, including those of rocky, swampy and aquatic areas, are discussed. The author concludes with a synthetic examination of the data under the following headings: Floristic richness; comparison with the Bagnes Valley, with the south slope of the Pennine Alps, with Entremont, Ferret, Bagnes and Zermatt; biological spectra; the generic coefficient; alpine and arctic-alpine species; and the upper limits of species.—A bibliography of 3 pages is included.—*Frederick V. Rand.*

6966. JACOT, ARTHUR P. *Biological survey by provinces.* *China Jour. Sci. and Arts* 2: 337–341. 1924.—The author describes a method of procedure in making a biological survey of the provinces of China.—*J. T. Hlick.*

6967. JACOT, ARTHUR P. *Life zones and temperature conditions in Shantung.* *China Jour. Sci. and Arts* 2: 550–555. 1924.—In studying the Littoral Marine Mollusca of Shantung the author finds them to resemble in great detail similar fauna of the coast of North Carolina, U. S. A. He concludes that Shantung Province lies within the Upper Carolinian life zone.—*J. T. Hlick.*

6968. LEMOINE, MME. PAUL. Répartition des Algues calcaires dans la Manche occidentale d'après les dragages du Pourquoi-Pas? [Distribution of the calcareous algae in the western Minch.] Bull. Mus. Hist. Nat. [Paris] 29: 462-469. 1923.—The writer reports the results of a series of dredgings made by the corvette *Pourquoi-Pas* between Scotland and the Hebrides. The following species of Melobesiaceae which were collected are discussed at length: *Lithothamnium Lenormandi*, *L. Sonderi*, *L. calcareum*, *L. polymorphum*, *L. hapalioides*, *Melobesia farinosa*, and *Epilithon membranaceum*. A special study was made of the bathymetric relations of the various species, and the tidal limits together with other factors determining distribution are noted.—*John M. Fogg, Jr.*

6969. LÜDI, W. Das pflanzenleben der Beatenhöhlen an Thunersee. [The vegetation of a local cave in Thunersee.] Mitteil. Naturf. Ges. Bern 1924: xliii-xliv. 1925.—The cave extends 800 m. into the mountain and being lighted by electric lights a cave flora has developed that includes prothallia and young plants of *Cystopteris fragilis*, *Bryum* sp., *Encalypta contorta* Wulf., *Eurhynchium Swartzii* Turn. f. *schistostegioides* Gams, *Fissidens decipiens* De Not., *Hymenostylium curvirostre* Rhrh., *Isopterygium depressum* f. *cavernosum* Gams, *Tortella tortuosa*, *T. muralis*, *Cystococcus humicola* Naeg.—*S. Blumer (translated).*

6970. MACDOUGAL, D. T. Tree trunks, growth and reversible variations in circumference. Science 61: 370-372. 1925.—The relation of dendrograph records of growth and variations in size of tree parts to the climatic factors is analyzed on the basis of the recent work of several men. Nakashima has recently published several formulae that state the relation between certain determining factors and certain measurements of growth for a single tree of *Abies Mayriana* in Japan. Other records are chiefly those of *Pinus radiata* taken by the author.—*C. J. Lyon.*

6971. RANADA, S. B., AND W. BURNS. The eradication of *Cyperus rotundus* L., a study in pure and applied botany. Mem. Dept. Agric. India Bot. Ser. 13: 99-192. 1925.—This plant is a troublesome weed in moist tropical soils reducing crop yields 25-30%. This bulletin contains a careful taxonomic, anatomical and ecological study of all phases of its life history. Its multiplication by seed, tubers and root-stocks makes it a very successful plant and one difficult to suppress. Experiments with seed germination, growth of tubers and development of tubers all point to the conditions for development of seed and tubers being the most vulnerable point in its life history. From the data resulting from this investigation a program of eradication is elaborated. This consists of a combination of fallowing and cultivation.—*Geo. D. Fuller.*

6972. SEEGER, RUDOLF, UND FR. KANNIGIESSER. Ein Beitrag zur Kenntnis der Lebensdauer arktischer und alpiner Holzgewächse. [The duration of arctic and alpine woody plants.] Mitteil. Deutsch. Dendrol. Ges. 33: 37-39. 1923.—The writers present tables of stem radius, average width of annual rings and age of 19 different species of trees and shrub which occur in arctic and alpine regions.—*J. C. Th. Uphof.*

6973. SHREVE, FORREST. Evaporation in redwood habitats. Carnegie Inst. Washington Year Book 23: 141-142. 1924.

6974. SHREVE, FORREST. Influence of slope exposure on soil temperature. Carnegie Inst. Washington Year Book 23: 140-141. 1924.

6975. SMITH, GILBERT MORGAN. Ecology of the plankton algae in the Palisades Interstate Park, including the relation of control methods to fish culture. Bull. Roosevelt Wild Life Forest. Exp. Sta. New York State Coll. Forest. Syracuse Univ. 2: 93-195. Pl. 3-24, fig. 18-19, maps 1-3. 1924.—After a general discussion of the nature of water blooms and the factors governing their occurrence the blooms of the locality investigated are discussed in detail. In the Palisades Park region there are natural lakes of the Baltic type, in whose flora blue-green algae predominate, and lakes of the Caledonian type, in which there are numerous desmids and but few blue-green algae. Although all of the artificial lakes of the Park that have been made recently are at present characterized by a flora rich in blue-green algae, the investigation showed that artificial lakes of the region 50-100 years old are of the Caledonian type. From this it is concluded that in time the newly made lakes of the Park, which now produce large numbers of the blue-green algae, will eventually have a flora of the Caledonian type and that desmids and not blue-green algae will be the dominant feature of the phytoplankton. Since

this type of lake rarely produces blooms, the disagreeable features of the lakes will disappear.—The use of copper sulphate is considered both from the standpoint of its effect upon the algae and upon the fish.—A systematic account of the plankton algae concludes the paper, all species found being figured. New species and varieties are *Coelosphaerium radiatum*, *Synura Adamsii*, *Pachycladon umbrinus*, *Pediastrum biradiatum* var. *heterocanthum*, *Staurostrum trihastiferum*, *S. Johnsonii* var. *triradiatum*, and *S. pseudopelagicum* var. *minor*.—*Author*.

6976. STEINBART, M. Baumformen aus der südliche Zone der immergrüne Gewächse—Wanderung durch Transvaal. [Tree forms from the southern zone of the evergreens scattered through Transvaal.] Mitteil. Deutsch. Dendrol. Ges. 34: 201–203. 1924.—The high plateau of the Transvaal, being situated in the zone of warm temperate evergreens offers much of dendrological interest. *Acacia horrida* here forms dense thickets. The small table-like mountains (kopjes) are covered with trees and shrubs of the Oleaceae, Lauraceae, Papilionaceae, Liliaceae (tree-like Aloes) and Proteaceae. Many Australian trees and several northern conifers succeed well while *Salix babylonica* and *Populus* grow rapidly in deep soil.—*J. C. Th. Uphof*.

6977. THOMSON, GEO. M. The naturalization of animals and plants in New Zealand. x + 607 p. Univ. Press: Cambridge, 1922.—About $\frac{1}{4}$ of this book is devoted to plants which are treated in systematic order, careful notes being given on more than 600 species. The author seems to have succeeded well in his declared intention to secure scientific accuracy in the collection and verification of information and in the avoidance of broad generalization. He agrees with Cockayne that most introduced plants have succeeded in replacing native species only where drainage, cultivation, burning and grazing by domestic animals have made absolutely new edaphic conditions which approximate those of Europe. An extensive bibliography is appended. [See also Bot. Absts. 12, Entry 3036].—*Geo. D. Fuller*.

6978. VISHER, STEPHEN S. Climatic laws; a summary of climate. 98 p. Fig. 1–9. John Wiley and Sons: New York, 1924.—According to the author's statement this book contains 90 generalizations regarding the geographic distribution of temperature, wind, moisture, etc. These have been compiled from many sources that are credited in the bibliography. This makes the volume one that may be employed by ecologists as a useful book of reference.—*Geo. D. Fuller*.

6979. WEAVER, J. E., AND H. C. HANSON. The nature and rôle of competition: crop and control cultures. Carnegie Inst. Washington Yearbook 23: 253–255. 1924.

6980. WISLOUCH, STANISLAW. Przyczynek do biologji solnisk i genezy szlamów leczniczych na Krymie. [The biological constituents and the formation of saline medicinal muds in Crimea.] (With a summary in German.) Acta Soc. Bot. Poloniae 2²: 99–129. 1 pl. 1924.—The microscopic algae and bacteria of 13 different areas with a salt concentration varying from 1 to 28° B were investigated. The flora was found to consist of Cyanophyceae, sulphur bacteria, colored flagellates, Chlorophyceae, Diatomaceae and Peridineae; the richer the flora the more rapid the mud formation. A luxuriant flora is not developed in salt concentrations beyond 12–14° B and in higher concentrations a sudden decrease in life is evident at 24–25°. The black saline medicinal mud develops from the plant and animal life.—The following new species are described; *Chroococcus sarcinodes*, *Synechocystis salina*, *Spirulina tenuissima*, *Cryptomonas Stigmatica*, *C. Salina*, *Raciborskiella salina*, *Carteria salina* and *Exuviella asymmetrica*.—*Geo. D. Fuller*.

STRUCTURE, BEHAVIOR, SYMBIOSIS

6981. BERNBECK, OSKAR. Wind und Pflanze. [Wind and plants.] Flora 117: 293–300. 1 graph. 1924.—Wind changes the composition of the air surrounding plants and within the plant-body, but exerts the strongest influence through disturbance of the water supply. To determine the effects of wind, experiments were performed on plants free to bend and plants attached to splints to prevent bending. The former were injured by wind of a velocity from 5 m.p.s. (miles per second) up, while the latter were unharmed by wind whose velocity did not exceed 14 m.p.s. The closing of stomata in wilted leaves was overcome by strong bending which forced a passage. Most of the plants studied were not able to reduce their transpiration in wind; *Linum usitatissimum*, if stiffened against bending, transpired less in all velocities of

wind than in calm air, but if free to bend it registered a water loss proportional to the velocity of the wind after it was sufficient to set the leaves in lively motion. A comparison was made of the difference between shade-leaves and sun-leaves in the reaction of the guard cells in wind. As long as the plant could offer mechanical resistance to wind, there was no death due to drying-effect. The mechanical strength of the wind had a strong influence on the water-content because of the bending which compressed the cells and forced out the water; this has a more pronounced effect than the drying influence of moving air. The sudden wilting in wind is called "mechanical wilting."—*Anna M. Starr.*

6982. CANNON, W. A. On some features of foliar structure of South African xerophytes. Carnegie Inst. Washington Yearbook 23: 135-137. 1924.

6983. FREMY, P. Incrustation calcaire du *Batrachospermum moniliforme* Roth. [Calcareous incrustations of *B. moniliforme*.] Bull. Soc. Linn. Normandie 7 Ser. 6: 118-121. 1 pl. 1923 [1924].—Specimens of this alga are described which grow well under an incrustation of calcium carbonate precipitated from the water. Phycoerythrin here acts as a sensitizer to the chlorophyll so that photosynthesis is able to proceed at very low light intensities.—*M. Denis (translated).*

6984. HICKEN, C. M. Caso curioso de epifitismo. [A curious case of epiphytism.] Darwiniana 1³-4: 167-170. 1 fig. 1924.—A date palm is described and figured with a 15 year-old specimen of *Eucalyptus globosus* 4-5 m. high growing in the germinal tuft of leaves.—*Author (translated).*

6985. HICKEN, C. M. Las algas del Género Chara y los mosquitos del género Anopheles. [The genus Chara and the mosquitos of the genus Anopheles.] Darwiniana 1²: 79-85. 1923.—This is a collection of extracts from the works of the Spanish botanist A. CABALLERO dealing with the death of Anopheles in lakes containing Chara. A bibliography of his articles is given.—*Author (translated).*

6986. HØEG, OVE. Pollen on humble-bees from Novaya-Zemlya. Rept. Sci. Results Norwegian Exped. to Nova Zembla 1921. No. 27. 1-18. Fig. 1-14. Kristiania, 1924.—(Printed in Oslo 1925).—An account is given of the pollens found on species of *Bombus* collected by the Norwegian expedition to Nova Zembla in 1921. The different types of pollens are described and figured and the pollens found on each bee are mentioned. On the whole, 16-20 species of plants are represented. The necessity or utility of insect pollination in the different plants is discussed. An exhaustive bibliographical list is given.—*K. Münster Ström.*

6987. PIERANTONI, U. Sulla biofotogenesi simbiotica. (Un'ultima parola in risposta a S. Mortara). [Symbiotic biophotogenesis. Answer to S. Mortara.] Boll. Soc. Nat. Napoli 34: (Ser. 2, 14): 307-309. 1921-1922 [1923].—The author refutes criticisms of his work and defends his interpretation of phosphorescence in animals as due to bacterial symbiosis.—*Edith K. Cash.*

6988. RAYNER, M. C. The nutrition of mycorrhiza plants: *Calluna vulgaris*. British Jour. Exp. Biol. 2: 265-292. Pl. 1-3, fig. 1-5. 1925.—Continuing her investigations of *Calluna vulgaris*, the author shows that its obligate relation with the endophytic fungus is associated with infection and seedling development and not with mycorrhizal formation and growth. The view is expressed that plants would probably grow quite well without mycorrhiza could seedlings be raised free from infection. In nature the formation of mycorrhiza in all roots is the rule. The development of the endophyte in mycorrhizal cells is markedly inhibited by the low soil temperatures of early spring and also under experimental culture conditions by sterilized soil and sand cultures. A digestion of the mycelium in the mycorrhizal cells is shown to continue during the growing season. There seems to be an exchange of nutritive material between the fungus and the vascular plant with the "balance of profit" on the side of the latter.—*Geo. D. Fuller.*

6989. STÄGER, R. Der Einfluss der Ameisen auf unsere einheimische Vegetation. [The influence of ants on native vegetation.] Mitteil. Naturf. Ges. Bern 1924: LI-LIV. 1925.—*Thesium alpinum*, which in Switzerland often goes beyond the treeline, is distributed by *Formica pratensis* and *F. fusa*. Above timberline stumps are found in the nests of *Formica pratensis* and *F. exaecta* where the wood is protected and preserved. Humus collected by the ants in the alpine region leads to the development of a succession of xerophytic mosses and

seedplants on small areas. More mesophytic plants such as *Potentilla silvestris*, *Veronica chamaedrys*, *V. fruticans*, *Viola tricolor*, *Galium mollugo*, *Silene nutans* and *S. vulgaris* follow and lead to a final stage of forest or meadow. Here also are found grassland plants such as *Epilobium angustifolium* which here reaches 2400 m. The higher temperature in the ants' nests may influence the development of seed plants. In the alpine region the importance of ants in transforming soil is at least equal to that of earthworms. They also undermine stones and cause them to disappear below the surface.—*S. Blumer (translated)*.

6990. ULBRICH, E. Die Beziehungen der Pilze zu den Baumen des Waldes. [Relation between fungi and trees of the forest.] Mitteil. Deutsch. Dentrol. Ges. 34: 304-311. 1924.—The occurrence of hyphae around the roots of a number of forest trees is mentioned. The advantages of mycorrhiza are described in detail, also the experiments of some investigators, especially those of C. Hammerlund. These fungi are an important link in the life activities of the forest. An excessive amount of collecting of mushrooms may become harmful, especially if forests are located near large cities. Clean cutting of the forest with the consequent exposure to light and drought may cause the death of many mycorrhizal mycelia. The consequences are that not infrequently fungus parasites may infest the roots. The writer mentions several species of Basidiomycetes which live as mycorrhiza upon species of forest trees.—*J. C. Th. Uphof*.

6991. WOOD, J. G. The selective absorption of chlorine ions; and the absorption of water by the leaves in the genus *Atriplex*. Australian Jour. Exp. Biol. and Med. Sci. 11: 45-56. 1 fig. 1925.—The paper deals with the absorption of water by the leaves of the "salt bushes" (*Atriplex* spp.) which are tomentose plants forming characteristic communities over large areas of Central Australia. They are not usually halophytes but grow in soil of a low salt content with poorly developed roots. Owing to uncutinized epidermis and large concentrations of salts in the leaf cells, absorption of water through the leaf is very rapid. Comparisons are made with other desert plants with uncutinized epidermis and also with plants in which the epidermis is cutinized. Analyses are given of plants from widely varying habitats and of the soils in which the plants were growing. It is found that there is a large selective absorption of chlorides by the plant cells, the amount fluctuating seasonally. The values of the osmotic pressures are given for the chief species and the mechanism of the absorption of water is discussed in relation to the suction pressure.—*Author*.

6992. YOSHIMURA, KIYOHISA. Ueber einen Ursprung des Stickstoffes bei *Cycas revoluta*. [Nitrification in *Cycas revoluta*.] (Japanese.) Wissenschaftl. Mitteil. Land- u. Forstw. Hochschule Kagoshima 5: 35-39. 1 fig. 1922.—*Cycas revoluta* can live in soil poor in nitrogen and yet the nitrogen content of the stems, leaves and seed is about equal to that of legumes. The author found *Anabaena Cycadeorum* parasitic in the roots of the plant and the nitrogen content of the parasitized and non-parasitized plants to be, respectively, 3.55% and 1.836% for roots and 0.605% and 0.584% for leaves. The ratio of the nitrogen content of the stems, leaves and roots of infected and non-infected plants was found to be 271:100. The author concludes that with the assistance of *Anabaena* the roots of *Cycas revoluta* are able to use the free nitrogen of the air.—*Author (translated)*. (Courtesy Japanese Jour. Bot.)

6993. ZABLOCKI, JAN. Synchytrium *Potentillae* Lagerh. na skatkach ojcowskich. [S. *Potentillae* on the chalk cliffs of Ojcow.] (With German summary.) Acta Soc. Bot. Poloniae 21: 67-68. 1924.—This parasite on *Potentilla opaca* has been found on a chalk cliff 15 km. northwest of Krakow. Only plants in washout depressions are parasitized. These are infected by motile spores of the fungus conveyed by water from melting snow. Formerly *S. Potentillae* was known only from alpine Switzerland and northern Scandinavia and from its habits may be a glacial relic.—*Geo. D. Fuller*.

FLORISTICS

6994. ANONYMOUS. China's temperate flora the richest in the world. China Jour. Sci. and Arts 2: 160. 1924.—Particular mention is made of the wealth of species originating in the China-Tibetan borderland.—*Albert N. Steward*.

6995. CAVARA, FRIDIANO. Su di alcune piante naturalizzate nelle provincie napoletane. [Some plants naturalized in the vicinity of Naples.] Boll. Soc. Nat. Napoli 31 (Ser. 2, 11):

126-131. 1918 [1919].—About 30 species of plants are recorded as having become naturalized in the Botanical Garden, *Solanum bonariense* Linn. at Piedimonte d'Alife, and *Oenothera stricta* Ledeb. along the railroad between the Sarno and S. Gennaro stations.—*Edith K. Cash.*

6996. FREMY, P. Localités nouvelles de plantes rares ou peu communes observées dans le département de la Manche. [New stations for rare plants in the department of Manche.] Bull. Soc. Linn. Normandie 7 Ser. 6: 115-118. 1923 [1924].

6997. FREY, ED. Eine pflanzengeographische Exkursion in die Auvergne. [A plant geography study in Auvergne.] Mitteil. Naturf. Ges. Bern 1924: XXIX-XXXII. 1925.—The flora of Auvergne is made up of middle European, Atlantic, Mediterranean, Sarmatian (Pontical), Boreal-Arctic and Alpine elements. The vegetation consists of zones of *Quercus pubescens* forests up to 750 m., beech forests 750-1500 m. and alpine vegetation above 1500 m. Lichen vegetation is abundant in the beech-silver fir forests and upon the volcanic peaks, but is poor in species.—*S. Blumer (translated).*

6998. GAUSSEN, H. A propos du Pin Laricio de Salzmann dans les Pyrénées. [Pinus Laricio var. Salzmanni in the Pyrenees.] Bull. Soc. Bot. France 71: 842-849. 1924.—The author examines the distribution of this tree (1) on the French side of the range, (2) the Spanish slopes and (3) at various new stations. The tree is essentially Mediterranean, is found upon a variety of soils and scarcely exceeds the upper limits of the evergreen oak.—*J. Chifflet (translated).*

6999. GOOR, A. C. J. VAN. Un coup d'oeil sur le caractère méridional de la flore suavage de Normandie. [The southern affinities of the flora of Normandy.] Bull. Soc. Bot. France 71: 891-899. 1924.—The flora of the Atlantic coast of France contains many species which belong to more southern floras. The environs of Cherbourg and Cotentin, studied by the author, although not on the Atlantic coast proper, have their temperature modified by the warm waters of the ocean to such an extent that many southern plants are cultivated and have been acclimatized there. The indigenous flora also includes many of the southern plants of the Atlantic coast and the author lists 100 such.—*J. Beauverie (translated).*

7000. GUADAGNO, M. La vegetazione del Monte Nuovo e le sue origini. [Vegetation of Mount Nuovo and its origin.] Boll. Soc. Nat. Napoli 34 (Ser. 2, 14): 238-306. Fig. 1-4. 1921-1922 [1923].—A careful survey has been made of the flora of Mount Nuovo, a volcanic cone near Naples formed by an eruption in 1539. The 355 species of plants listed comprise a total of 62 families and 231 genera, 56% being annual or biennial, while 44% are perennials. All except 4 are common to Mount Nuovo and the surrounding country of Campi Flegrei. The presence of *Aira Tenorii*, *Listera ovata*, *Corydanthus capitatus*, and *Hieracium Bauhini*, which do not occur in Campi Flegrei, indicates that the seed of these species must have been carried from considerable distance.—*Edith K. Cash.*

7001. GUILLAUMIN, A. Trois localités nouvelles pour la flore de l'Eure-et-Loir. [Three new stations for the flora of Eure and Loir.] Bull. Soc. Bot. France 71: 909-910. 1924.—The flora of Normandy is shown to extend eastward to Orne.—*H. des Gayets (translated).*

7002. HOCQUETTE, M. Quelques plantes adventices du Nord de la France. [Adventive plants in northern France.] Bull. Soc. Roy. Bot. Belgique 57²: 166-176. 1925.—Lists of adventitive plants are given with notes on species that have extended their range or have disappeared.—*E. De Wildeman (translated).*

7003. HOLMBOE, JENS. Cladium Mariscus R. Br. og dens utbredelse i Norge un og i aeldre tid. [The present and former distribution of C. Mariscus in Norway.] Bergens Mus. Aarb. 1922-23 (Naturvidens. række No. 2): 1-15. Fig. 1 3, 1 map. 1924.—In the summer of 1922 the author found the plant in Western Norway where it has not previously been known. The history of the earlier Norwegian records of the plant is given. The fossil occurrence of *Cladium* is discussed in connection with the climatic changes. The author is of the opinion that one can not draw too general conclusions concerning the humidity of the climate from the distribution of the plant, but that the minimum temperature can be approximated.—*K. Münster Ström.*

7004. KOCH, FRANZ. Ueber die rezente und fossile Verbreitung der Koniferen im lichte neuerer geologischer Theorien. [Recent and fossil distribution of conifers in the light of new geological theories.] Mitteil. Deutsch. Dendrol. Ges. 34: 81-99. 4 col. maps. 1924.—The

writer, basing his discussion on the Reibisch pendulum theory, considers it based on a physico-mathematical foundation. He holds that we are now emerging from a glacial period and Europe is approaching the equator whereas South Africa is approaching the south polar phase. With the changing of poles, of climates, and of elevations there is a strong tendency for the formation of new and more complete forms of plants and animals. The origin and distribution of several genera of conifers are discussed. *Librocedrus* originated in Europe and by a northern route reached China, Japan, and through California going southward, it reached New Caledonia and New Zealand in the east and Chili and Patagonia in the west. It has disappeared from intervening areas. *Araucaria* is cited as another example, with *A. imbricaria* and *A. brasiliensis* in the west and many species in the eastern area which includes Australia and Polynesia. It is held that Reibisch's theory is a general one that eliminates all difficulties and that various former land connections and vanished continents had much to do with the present distribution of species.—*J. C. Th. Uphof*.

7005. MARÉCHAL, ARTH. *Dispersion du Carex strigosa* Huds. dans les environs de Liège. [The distribution of *C. strigosa* near Liege.] Bull. Soc. Roy. Bot. Belgique 57: 164-165. 1925.—The author records the presence of this species on the siliceous clay of the wooded valley of Kinkempois and in similar habitats at Neuville-en-Condroz, Chaudfontaine and Vaulx-sous-Chèvremont.—*É. De Wildeman (translated)*.

7006. MOUSLEY, HENRY. Further notes on the orchids, ferns and butterflies of Hatley, Stanstead County, Quebec, 1924. Canadian Field Nat. 39: 37-39. 1925.—New stations were found for some of the orchids and ferns mentioned in previous papers.—*W. H. Emig*.

7007. PIECH, KAZIMIERZ. *Doronicum austriacum* Jacq. i *Cochlearia officinalis* L. w. okolicy Olkusza. [*D. austriacum* Jacq. and *C. officinalis* L. in the vicinity of Olkusz.] Acta Soc. Bot. Poloniae 2: 216-221. 1924.

7008. UPHOF, J. C. TH. Dendrologische Notizen aus dem Staate Florida. [Dendrological notes from Florida.] Mitteil. Deutsch. Dendrol. Ges. 34: 207-218. 2 pl., 5 fig. 1924.—The principal trees and shrubs growing in Central Florida are described, especially those from the high and low pinelands, flat-woods, the xerophytic woods of the St. Lucie fine sand and of the hammocks.—*Author*.

7009. WILLIAMS, M. Y. Notes on the life along the Yukon-Alaska boundary. Canadian Field Nat. 39: 67-72. 1925.—This paper on the fauna of the region includes a reference to the common trees.—*W. H. Emig*.

VEGETATION

7010. BEQUAERT, J. Végétation du Bas-Chiloango et limite occidentale de la forêt du Mayumbe. [The vegetation of Bas-Chiloango and the western limit of the Mayumbe forest.] Rev. Zool. Africaine Suppl. Bot. 8: 21-24. Map. 1920.—The mangrove forest of the lower Shiloango extends 8 or 10 km. from the mouth. Farther inland, the primary rain forest is much less extensive in the Belgian part of the Mayumbe than generally indicated. The southern and western parts visited by the writer, consist mostly of fringing forest along rivers and patches of 2nd-growth woods alternating with grassland. The transition belt between the savanna and the continuous rain forest is 40-50 km. wide, as shown on a sketch-map. The dominant species of the several formations are mentioned.—*Author*.

7011. CULOT, A. Herborisation du 15 juin 1924 dans la vallée de la Sambre. [Collecting excursion of June 15, 1924, in the valley of the Sambre.] Bull. Soc. Roy. Bot. Belgique 57: 188. 1925.

7012. FONSECA, OLYMPIO DE OLIVEIRA RIBEIRO DA. Vegetação e aspecto phytogeographico do Brazil. [Vegetation and phytogeographic aspects of Brazil.] 38 p. 31 pl. Rio de Janeiro, 1923.—Reprint with alterations and additions of Flora in Instituto historico, e geographico brasileiro, Dicionario histórico, geographico, e ethnographico, vol. 1, p. 210-225. 26 illus. Imprensa nacional: Rio, 1922.—The author has summarized the available knowledge of Brazilian vegetation. The geological evolution of Brazil, from the Eocene period, is described. The essential problem of Brazilian phytogeography is to discover the origin of the flora and the successive transformations through which it passed, during the various geologic periods, and the factors which govern the distribution of forest and grassland. No satisfactory

general classification has yet been found because the basic paleogeographic and paleoclimatic facts for the solution of the problem have not yet been secured.—The regions into which Martius and Engler divide the country are still those generally accepted by Brazilians: the Amazon Valley, the tropical forests of eastern Brazil, the thorn (caatinga) regions of the Northeast, the prairies (campos) including those of the interior, and the Araucarian woods of Southern Brazil. The divisions of Drude, Lindman, and others are compared. Fossil horses have been discovered in the campos of Minas Geraes and the author, after a careful consideration of the part played in the formation of open prairies by the burning of forests, agrees that the fossil horses indicate climax grasslands on areas erroneously supposed to have been forested originally.—In addition to the “campanha” of Rio Grande do Sul, the Brazilian prairie (campo) includes open prairies (campos limpos) of 4 types (meadow, paleaceous, amarantaceous, and marsh lands) and the prairies covered with shrubs and low, scattered trees (campos cerrados). The characteristics which distinguish the Brazilian campos from the Venezuelan llanos, the Guiana savannas, and the Argentine pampas are enumerated. The vegetation of the sand dunes, coast woods (nhundus) and swamps is described, together with the floating vegetation and that of the alluvial lands and the “terra firma” in the Valley of the Amazon and on the Island of Marajó. A section is also devoted to the Brazilian highlands and the Itatiaia peak.—The last part of the monograph describes the forest formations: the evergreen forests of the moist regions, the deciduous trees of the hot, northeastern parts of Brazil, the Araucaria forests of the South, the isolated groves of various kinds of trees, the cacti and trees of the caatinga.—In the description of each region long lists of plants indicate the specific type of vegetation. The fact is noteworthy that technical Brazilian terms are clearly and exactly defined (variations in usage explained); both the native and scientific names of plants are invariably given, and the original Indian meaning of terms from the Guarany is included. Conspicuous colors in flowers are noted and the photographs graphically illustrate unusual and characteristic plants and vegetative regions mentioned in the text.—*Marie Kiersted Pidgeon*.

7013. LLOYD, FRANCIS E. The vegetation of Canada. In: *Handbook of Canada*, Toronto, 1924. P. 207–228. Fig. 18–21. 1924.—A general description of the vegetation is organized on the basis of Mirriam's life zones, the Arctic, Hudsonian, Canadian and Transition being recognized and described, and lists of characteristic species given. A somewhat closer analysis is made of the British Columbian region. A bibliography is appended.—*Geo. D. Fuller*.

7014. MACOUN, JOHN. Marine investigations on the west coast of Vancouver Island. 1909. *Canadian Field Nat.* 38: 157. 1924.—The whole coast outside the Ucluelet Inlet is lined with kelp, *Macrocystis pyrifera* and *Nereocystis Leutkiana*.—*W. H. Emig*.

7015. [MALTSEV, A. I.] Мальцев, Ц. И. Фитосоциологические исследования Каменистой Степи. [Association of plants in Kamennaja Steppe (province Voronezh).] (English summary) Труды по прикладной Ботанике и селекции. [Bull. Appl. Bot. and Plantbreed.] 13²: 135–254. 2 fig. 1922–1923 [1924].—This paper deals with the vegetation of Kamennaja Stepj in the province of Voronezh. Plants characteristic of different parts of the Stepj are listed and their ecological relations pointed out.—*M. Demerec*.

7016. SCHENCK, C. A. Die Douglasfichte in British Columbien. [Pseudotsuga in British Columbia.] *Mitteil. Deutsch. Dendrol. Ges.* 34: 66–75. 1924.—The writer follows a report of the Canadian Forest Commission in describing various Douglas fir (*Pseudotsuga Douglasi*) forests along the Fraser River and in other parts of British Columbia. A *Pseudotsuga-Larix* forest in the southern part of the province is included.—*J. C. Th. Uphof*.

7017. SHREVE, FORREST. Deserts of northwestern Sonora. *Carnegie Inst. Washington Yearbook* 23: 138–140. 1924.

7018. SIEHE, WALTHER. Bäume und holzige Sträucher Ciliciens. [Trees and shrubs of Cilicia.] *Mitteil. Deutsch. Dendrol. Ges.* 34: 187–184. 1924.—A long list is presented of trees and shrubs occurring in the coastal area, pine area, Cedrus area and alpine region in Cilicia. Various remarks are made as to distribution, type of growth and economic use of some species.—*J. C. Th. Uphof*.

7019. TEUSCHER, HEINRICH. Dendrologische Wanderung durch die White Mountains. [Dendrological excursion through the White Mountains.] *Mitteil. Deutsch. Dendrol. Ges.*

33: 10-13. 1923.—A description is given of the woody plants along the White Mountains north of Massachusetts and New Hampshire.—*J. C. Th. Uphof.*

7020. UPHOF, J. C. TH. *Der nordamerikanische Sumpfwald.* [The North American swamp forest.] *Mitteil. Deutsch. Dendrol. Ges.* 33: 13-15. 2 pl. 1923.—The principal types of swamp forests in the Middle West and in the southeastern part of the U. S. A. are described.—*Author.*

FORESTRY

W. N. SPARHAWK, *Editor*

(See also in this issue Entries 6819, 6835, 6849, 6919, 6922, 6929, 6930, 6976, 6990, 6998, 7008, 7009, 7010, 7012, 7016, 7018, 7019, 7020, 7227, 7236, 7321, 7329, 7346, 7375, 7378, 7408, 7528)

7021. ANONYMOUS. *Forest research councils.* *Science* 61: 307. 1925.

7022. ANONYMOUS. *Korkerzeugung in Spanien.* [Cork production in Spain.] *Tropenpflanzer* 24: 158. 1921.—The cork oak forests of Catalonia produce the hardest and best cork. They belong to private owners, while the forests of Andalusia, which furnish a light, usually soft cork, belong to the State. Virgin cork, which is hard but not elastic, comes from 15 year-old trees with 20-30 cm. stem diameter. After another 15 years the same trees produce an elastic secondary cork at least 28 mm. thick. The harvested cork plates are boiled for 20 minutes, cleaned, placed on one another, pressed by stones and dried. Every 7-10 years thereafter a new crop is harvested.—*J. C. Th. Uphof.*

7023. ANONYMOUS. *Prepare now for the fire season.* *Timberman* 26⁵: 248. 3 fig. 1925.—Methods and equipment for fighting forest fires are suggested.—*Duncan Dunning.*

7024. ANONYMOUS. *Streichhölzer aus Palmen.* [Matches from palms.] *Tropenpflanzer* 24: 157. 1921.—In Travancore, British India, a factory has been erected for making matches from cocos leaves, and match boxes from palmyra palms.—*J. C. Th. Uphof.*

7025. ANONYMOUS. [Rev. of: BLAKE, ERNEST G. *The seasoning and preservation of timber, with a chapter on the origin and spread of dry rot.* 122 p. 40 fig. Chapin & Hall: London, 1924.] *Indian Forest*. 51: 174-175. 1925.—The principles of seasoning and preserving timber are set forth. Exception is taken to the statement that softwoods are more susceptible to treatment than hardwoods, for in India the reverse is often true. The chapter on dry rot is of value.—*E. N. Munns.*

7026. AKERMAN, ALFRED. *The forests of Surry County, Virginia.* *Virginia Forest.* Publ. 37: 1-18. Pl. 1-3. 1925.—Three-fourths of the area of the county, or 135,201 acres, is wooded. There is estimated to be about 314,000,000 board feet of pine timber and 118,000,000 feet of hardwoods.—*W. N. Sparhawk.*

7027. ANDERSSON, GUNNAR. *Det svenska skogsbrukets nuvarande ställning.* [The present position of Swedish forestry.] *Skogen* 12: 68-91. 1925.—Since Sweden's production of forest materials has increased so enormously in the last 10 years, until they make up over 54% of her exports, it is well to take stock of how the forests are being handled under different forms of ownership. A recent survey shows that 60% of the forest land in private ownership is held by peasants, whose weaker economic position does not encourage them to practice as rational forest management as the larger owners. Among lumber and paper companies, the greater part now manage their lands on a sustained-yield basis, although 45% of their raw material must be purchased outside. Counting state and communal forests, 58% of the total forest area is well-managed, while 42% is subject to destructive exploitation. Measures for better forestry must follow lines of constructive assistance to the small owner.—*Henry I. Baldwin.*

7028. ANTONI, [PAUL]. *Défense des forêts contre l'incendie.* [Forest fire protection.] 110 p. Berger-Levrault: Paris. 1923.—This is the report of a special commission appointed by the French Forest Service to study the forest fire problem, as a result of the disastrous fires in 1921. In that year, 3,566 fires burned over 50,000 ha. of forests, with damage estimated at 14,000,000 francs. The report recommends preventive measures, including restrictive legislation, cooperation of the railways and the military services, postponing the hunting season in danger periods, and propaganda and public education. Detailed recommendations are

made for protective measures, including means of detecting and reporting fires, organization of personnel and fire fighting equipment, the construction of fire-breaks, and silvicultural measures tending to reduce fire danger. Methods of fire-fighting are discussed briefly, as is also the reforestation of burned areas. A résumé of the action taken on these recommendations up to the end of 1922 is appended, together with detailed reports by LOMBARD on fire-breaks and methods of fire-fighting.—*W. N. Sparhawk.*

7029. BATES, JOHN S. *Distillation of hardwoods in Canada.* Dept. Interior Canada, Forest. Branch Bull. 74. 1-41. 1922.—Beech, birch, and maple are the principal species used. Since these hardwoods are plentiful in Canada and about 95% of the lumber cut is of softwoods, large areas are being converted into hardwood stands of little value. Increased utilization of hardwoods, especially birch, will make it easier to reproduce the valuable conifers. From the point of view of the conservation of natural resources, therefore, such an industry as hardwood distillation should be encouraged. New processes of manufacture, uses, and markets are discussed. A bibliography of 36 titles is given. Statistics of the industry are appended.—*L. H. Pennington.*

7030. BAUMBACH, VON. *Erfahrungen mit den Anbau fremdländischer Holzarten in der Provinz Hessen-Nassau.* [Experiences with growing exotic trees in the province of Hessen-Nassau.] *Mitteil. Deutsch. Dendrol. Ges.* 34: 19-32. 1924.

7031. B[EESE], C. F. C. *Meteorological factors and growth.* [Rev. of: NAKASHIMA, HIROKICHI. *Über den Einfluss Meteorologischer Faktoren auf den Baumzuwachs.* Jour. Coll. Agric. Hokkaido Imp. Univ. [Sapporo] 12²: 69-263. Pl. 11-26. 1924.] *Indian Forest.* 51: 172-173. 1925.—The growth cycle of silver fir, as measured by the Freidrich increment-auxograph, includes 4 seasons. This may be of value in defoliation studies.—*E. N. Munns.*

7032. BERG, FRIEDRICH VON. *Saatzucht der Pinus silvestris.* [Seed raising of *Pinus silvestris*.] *Mitteil. Deutsch. Dendrol. Ges.* 34: 107-109. 1924.—When planted in Esthonia, many plants from French and south German seed died, and the rest developed crooked stems. Much seed collected in northern Germany is derived from trees which came originally from the south. Seedlings from south German seed were larger than those from north German seed, and grew well during the 1st season. During the 2nd and 3rd years most of the plants from southern seed died, and also many from northern seed. The writer advises care in selecting seed, which should be collected only from good reliable trees.—*J. C. Th. Uphof.*

7033. BLAKE, ERNEST G. *The seasoning and preservation of timber.* xii + 133 p. 40 fig. Chapman & Hall, Ltd.: London, 1924.—The following subjects are treated: Growth and structure of timber; causes of decay, including destruction by termites and teredo; methods of preserving timber; drying and seasoning processes and plants; antiseptic impregnating processes, preservatives, and plants; and dry rot.—*W. N. Sparhawk.*

7034. BLANDFORD, H. R. *Regeneration with the assistance of taungya in Burma.* *Indian Forest Rec.* 11³: 81-121. 10 pl. 1925.—The uses of "taungya" or temporary hill cultivation in handling forest crops are given for teak (*Tectona grandis*), pyinkado (*Xylia dolabriformis*), taukkyan (*Terminalia tomentosa*), pyinma (*Lagerstroemia Flos-Reginae*) and yemane (*Gmelina arborea*). While the methods vary with local custom and with species, the typical program is about as follows: In the 7th year before germination, the teak or other trees needing full drying are girdled. Four or 5 years later these are taken out, the work extending over 2 years. Then the areas are allotted to the villagers and cuttings begin. In the early spring, when areas are completely denuded, the material removed is burned. By the end of May the tree seed are sown and seed spots staked, after which field crops are sown. The tree seedlings are cultivated and tended up to the end of the field season. Field crops are raised only the 1st season, as after that they would be detrimental to the young trees. After the end of the 1st year some weeding is necessary, and fire protection and thinning must be provided for as the stand grows older. This method, by combining production of a food crop with the forest crop, results in a low cost of forest renewal, and might be employed more extensively.—*E. N. Munns.*

7035. BLANDFORD, H. R. *The aero-photo survey and mapping of the forests of the Irrawaddy delta.* *Indian Forest.* 50: 605-616. Pl. 23. 1924.

7036. BOCARMÉ, A. DE. *Beobachtungen über Anbau von Nadelhölzer in Belgien.* [Ob-

servations on growing conifers in Belgium.] Mitteil. Deutsch. Dendrol. Ges. 34: 55-66. 1924.—Originally, conifers were scarce in Belgium. *Pinus silvestris* is now of most importance; it was first introduced from Scotland. About 25 species of importance are described, the most valuable being *Pseudotsuga Douglasii*, *Picea sitchensis* and *Abies grandis*.—J. C. Th. Uphof.

7037. BODEN. Anbauversuche mit ausländischen Holzarten im akademischen Lehrrevier Freienwalde a. o. 1883-1921. [Experiments with exotic forest trees in Freienwalde, 1883-1921.] Mitteil. Deutsch. Dendrol. Ges. 34: 32-55. 1924.—Experiments with 35 species are described. *Pinus rigida* suffered from wind and snow, and proved to be of little value. *P. ponderosa* and *P. Jeffreyi* require high atmospheric humidity, which is not present in the experiment station and are also subject to early frosts. They are recommended for parks but not for forest planting. *P. banksiana* does well on the poorest soil, even on sand dunes. The trees grow rapidly when very young. The wood is of inferior quality. Owing to their sharp needles, *Picea sitchensis*, *P. pungens* and *P. Engelmanni* do not have to be protected against animals. They suffer the first 10 years from *Agaricus melleus* and *Pestalozzia*. *P. sitchensis* grows slowly when young, but much faster when about 20 years old. It may grow in a heavy, wet loam but prefers fresh sand. It will not grow in dry soil. *Thuja gigantea* must be protected against frost and can not be grown in dry sandy places. It is recommended for open forests and parks. *Chamaecyparis lawsoniana* requires fresh loamy soil and a somewhat dry situation. It is not damaged by frost. It grows slowly during the first 3 years and flowers from the 15th year; 30 year-old trees are 18 m. high and 23-24 cm. in diameter. It also suffers from *Agaricus melleus* and *Pestalozzia*. It is recommended for forest planting. The wood is light but durable. *Pseudotsuga Douglasii* is strongly recommended as a forest tree. *Larix leptolepis* grows faster than Douglas fir, reaching 20 m. in height at 20 years. It does best on fresh sandy loam. It is less susceptible to frost than *L. europaea*. Young plants must be protected against stags. *Juglans nigra* is grown in pure formations, and also with oak or beech. Transplanting is difficult on account of the long tap roots, which can not be pruned successfully. Seed are stratified, mixed with liquid manure and covered by solid manure. *Quercus rubra* grows well everywhere, but is often damaged by stags. *Catalpa speciosa* grows in the open, is susceptible to cold, and is not suitable for diluvial soils. It should be protected against animals. Many minor notes concerning other forest plants are given.—J. C. Th. Uphof.

7038. BRITTON, W. E., G. P. CLINTON AND W. O. FILLEY. Second report of the tree protection board. Connecticut [New Haven] Agric. Exp. Sta. Bull. 263. 140-192. Pl. 9-16. 24 fig. 1924.—The report of the tree protection examining board shows that 109 persons have been granted certificates permitting them to engage in the profession of tree protection in the 5-year period, while 80 certificates are in force through renewal. In 3 years, 16 examinations were held and certificates were granted to 48 out of 53 applicants. Sections are included explaining tree surgery, cavity work, the ravages of insects and their control, and fungous and other diseases.—Henry. Dorsey

7039. BROWN, L. L. Canadian Sitka spruce, its mechanical and physical properties. Dept. Interior Canada, Forest. Branch Bull. 71. 1-39. Fig. 1-20. 1921.—Information is given as to the occurrence, characteristics, annual cut, use, and structural and physical properties of Sitka spruce in British Columbia. Tables and diagrams show the results of tests. Spruce grown on the Queen Charlotte Islands is stronger than that grown on the mainland in southern British Columbia. Strength increases from the center to the periphery of the tree. It also increases rapidly when the wood is dried below the fiber saturation point. The strength of any piece of clear Sitka spruce can be closely estimated if its density is known.—L. H. Pennington.

7040. BUNBURY, H. M. The destructive distillation of wood. vii-xx + 320 p. 113 fig. Benn Bros.: London, 1923.—The plant, processes, and methods adopted in modern wood distillation practice are described, with chapters on the history of the industry, the kinds of wood employed, and the yields of commercial products of thermal decomposition of wood. The physical properties and chemical composition of wood are treated in detail, as is also the chemistry of distillation. Data from many sources in several countries are presented in numerous tables. (See also Bot. Absts. 13, Entry 1539.)—W. N. Sparhawk.

7041. CAJANDER, A. K. Der Anbau ausländischer Holzarten als forstliches und pflanzengeographisches Problem. [Growing exotic trees as a forestry and phytogeographic problem.] Mitteil. Deutsch. Dendrol. Ges. 34: 13-19. 1924.—In studying the introduction of exotic species, special attention should be given to the study of climatic races, and their adaptability to the given regions. Many experiments with exotic trees have already been made in various parts of Europe. The writer mentions the extensive forest of *Larix sibirica* established by the Russian government at Raivola in the 18th century. From the standpoint of tree races, 5 kinds of climate are distinguished: warm maritime, cool maritime, warm continental, temperate continental, and cool continental. The climate of Finland is compared with somewhat similar climates in other regions, including; (1) Northern Russia, with *Larix sibirica*, *Abies sibirica*, *Pinus cembra sibirica*, and *Salix viminalis*; (2) the mountains of eastern central Europe and the Balkans, with *Larix europaea*, *Pinus cembra*, *P. montana*, *P. peuce*, *Abies pectinata*, and *Picea omorica*; (3) the continental mountain regions in Caucasus and neighboring Asia Minor, with *Abies nordmanniana*, *Picea orientalis*, and *Acer Trautvetteri*; (4) the central Asiatic mountains, with *Picea schrenckiana*, and *Sorbus tianshanica*; (5) the high mountains in western China near Tibet, with *Abies* and *Picea* species; (6) portions of eastern Asia, with *Larix kurilensis*, *Abies sacchalinensis*, *Taxus cuspidata*, *Quercus glandulifera*, *Q. grosseserrata*, *Q. crispula*, and *Q. mongolica*; (7) the forests of northeastern Canada and the mountains of the northeastern U. S. A., with *Larix americana*, *Abies balsamea*, *Picea alba*, *Thuja occidentalis*, and *Betula papyrifera*; and (8) the inner coast of Alaska and the Rocky Mountains, with *Larix occidentalis*, *Pinus murrayana*, *Pseudotsuga Douglasii*, *Abies subalpina* (*A. lasiocarpa*), *A. arizonica* and others.—J. C. Th. Uphof.

7042. CAMERON, E. P., AND W. C. LODGE. The pulping qualities of fire-killed wood. Dept. Interior Canada, Forest. Branch Bull. 76. 1-16. Fig. 1-3. 1924.—Details are given for tests by the sulphite process of sound green spruce, scorched and fungus-infected spruce, sound green balsam fir, and scorched and fungus-infected balsam fir. For 6 cooks with green spruce the average yield of bone-dry pulp was 48.57%; for 8 cooks with fire-killed spruce, 45.03%; for 4 cooks with green fir, 48.51%; and for 3 cooks with fire-killed fir, 42.4%. In quality, pulp from fire-killed wood was nearly as good as that from green wood.—L. H. Pennington.

7043. CHANG, FU-LIANG. Some Chinese trees and their products. China Jour. Sci. and Arts 2: 564-570; 3: 96-102. 1924-1925.—Mention is made of the varied flora found in China and it is stated that 15,000 plant species are indigenous to the country. An extensive list is given of Chinese plants now cultivated in western countries. Several of these have been given names pertaining to other regions or countries. There is a striking resemblance between certain distinctive North American trees and other species of the same genera in China. The following trees are discussed and their uses set forth: Bamboos (*Phyllostachys*, *Bambusa*, and *Dendrocladus*) are the most important economic trees of China. *Cunninghamia lanceolata* is the most important timber tree. *Pinus massoniana* is generally used for fuel. *Juniperus chinensis*, *Thuja orientalis*, *Cupressus funebris*, *Firmiana simplex*, *Ginkgo biloba*, *Liquidambar formosana*, *Pistacia chinensis*, *Cedrela sinensis*, *Robinia pseudoacacia* and *Cryptomeria japonica* are ornamentals. *Melia azedarach* is the best shade tree. *Aleurites fordii* is the source of Chinese wood oil and *Thea oleifera* of tea oil. *Diospyros kaki* is valued for its fruit. *Rhus vernicifera* is the source of Chinese lacquer. *Rhus javanica* produces the "nut galls" which are widely used in tanning. *Sophora japonica* supplies a yellow dye. *Sapium sebiferum* produces a wax from which candles are made and which is exported for soap-making, while the fruits of *Gleditschia sinensis*, *Gymnocladus chinensis* and *Sapindus mukorosi* are rich in saponin and are widely used as soap. *Ligustrum lucidum* and *Fraxinus chinensis* are the host plants upon which a wax-producing insect (*Coccus polia*) lives. *Ligustrum* is also an important hedge plant. Paper pulp is obtained from *Imperata arundinacea*, *Tetrapanax papyrifera*, *Hibiscus*, bamboo, and *Broussonetia papyrifera*. *Cinnamomum camphora* yields camphor, and *Thea sinensis* is the tea plant. A bibliography of 8 titles is given.—Albert N. Steward.

7044. CHAUDHURI, M. C. Defoliation of Gamhar (*Gmelina arborea*). Indian Forest. 51: 57-59. 1 fig. 1925.—Beetles (*Calolepta leayana*) attacked the Gamhar plantations in their 2nd and 3rd years, the larvae eating the leaves in 10-12 days after hatching. Several

attacks were made in 1 year, as the broods complete their life cycle in 2 months. The trees were not killed, but growth stopped.—*E. N. Munns.*

7045. CLEGHORNE, W. S. H. A study in charcoal, being a research on charcoals made from exotic woods grown in the Union of South Africa. *Trans. Roy. Soc. South Africa* 11: 23-43. 5 fig. 1923.—Charcoals from the following species were analyzed and tested for relative fuel values: *Eucalyptus resinifera*, *E. viminalis*, *E. saligna*, *E. sideroxylon*, *E. terebinctornis*, *E. Maidenii*, *Pinus insignis*, *P. laeda*, *P. pinaster*, *Cupressus lusitanica*, *Acacia decurrens* var. *mollis*, *A. cyclopis* and *A. saligna*.—*W. N. Sparhawk.*

7046. COKER, WILLIAM C., AND ENID MATHERLY. How to know and use the trees. Univ. North Carolina Ext. Bull. 314: 1-72. Pl. 1-39. 1924.—The use of the native and a few exotic trees for shade and ornament is emphasized, and plans and suggestions are given for planting grounds and streets. A key to all the native North Carolina trees is included.—*W. N. Sparhawk.*

7047. CRONEMILLER, LYNN F. Relative humidity and forest fires. *Timberman* 26⁵: 64, 200, 202. 1 fig. 1925.

7048. CURTIS, CARLTON C. A guide to the trees. 208 p. Illus. Greenberg: New York, 1925.—The trees and a few of the shrubs of northeastern North America are briefly described in simple language, with keys for identification. Common names follow the standards adopted by the American Committee on Horticultural Names.—*W. N. Sparhawk.*

7049. DELIUS. Ein holländisches Verfahren zur Erziehung von oberirdischen Ablegern. [A Dutch method of obtaining layerings above the ground.] *Mitteil. Deutsch. Dendrol. Ges.* 34: 116-117. 1924.—A layer of *Sphagnum* moss, 2 cm. thick, is spread on a table and covered with a layer of *Hypnum* moss. This layer is soaked with a decoction of potato water. The whole is then rolled around a piece of wood, of the same diameter as the twig which is to be layered. The moss cylinder is covered with water-soaked cheese cloth, which condenses the cylinder as it dries. After 24 hours the cloth is removed, and the cylinder is hung in the shade to dry further. When the sap is flowing, the cylinder is tied around the twig, which is ringed for a width of 2 fingers. In 3-4 months roots are formed within the cylinder. The twig may then be removed and planted. In this way apples, pears, and elms rooted well. Busgen states that this method is probably also in use in Buitenzorg, Java. —*J. C. Th. Uphof.*

7050. DE WILDEMAN, E. Les forêts africaines et leur exploitation. [African forests and their exploitation.] *Rev. Econ. Internat. (Ann. 13)* 2: 185-194. 1921.—Before planning for large-scale exploitation of the forests of tropical Africa, the extent and character of the timber resources should be carefully investigated, preferably through international cooperation of the interested countries. There is reason to believe that some writers have over-estimated the timber wealth of the region, and there is danger of destroying the forests and causing great economic injury to the colonies by unwise exploitation.—*W. N. Sparhawk.*

7051. ELLIS, L. MACINTOSH. Annual report of the Director of Forestry for the year ended 31st March, 1924. 29 p. 17 fig. Wellington, New Zealand. 1924.—At the end of the year there were 7,433,181 acres of State forest in New Zealand. The total forest income was £93,479, and the total expenditure £42,584; 7,027 acres were planted; 1,840,000 trees were distributed, and £266,388 worth of ripe timber was sold. A Dominion-wide forest inventory has been made, and the problem of formulating a permanent forest program has now to be faced. The work is handicapped by the lack of trained men, there being only 96 on the permanent staff. Details are given as to the constitution and management of the forests, and of the various researches in hand, under the heads silvicultural research, silvical research, afforestation studies, forest products investigations, and forest economics. The output of timber for the year was 330,000,000 superficial feet. Graphs indicate the production of the various kinds and the amount of exports and imports. A list is given of the educational leaflets published. Appendices include reports on the operations in the North Island (by H. A. GOUDIE) and in the South Island (by W. T. MORRISON) and statistical summaries. A series of notes on the British Empire Forestry Conference held in Canada in 1923 is appended.—*H. H. Allan.*

7052. EMIES, W. Erfahrungen mit ausländischen Holzarten in der Provinz Schleswig-Holstein. [Experiences with exotic trees in the province of Schleswig-Holstein.] *Mitteil.*

Deutsch. Dendrol. Ges. 33: 133-156. 4 fig. 1923.—*Picea sitchensis* may be grown in places subject to wind and is resistant to root fungus which injures the native *Picea*. *Pseudotsuga Douglasii*, especially the green, coastal variety, is preferred above native species. *Picea alba canadensis* resists wind and may be planted along the margins of the forest, as well as near the coast. *Larix leptolepis*, being resistant to disease, can replace *L. europea*. *Abies grandis* grows rapidly near the coast and thrives even on sterile soils. It should be protected against north and northwest winds. *Carya alba* should be planted in loamy humus or loamy sand. *Prunus serotina* is planted on sandy soil but should not be set too close. *Quercus rubra* and *Q. cerris* must be planted on good, medium soil; on account of their rapid growth, especially near the coast, they could replace the German oaks.—J. C. Th. Uphof.

7053. ESCHERICH, K[ARL.] *Die Forstinsekten Mitteleuropas. Ein Lehr- und Handbuch.* 2 Bd. [The forest insects of Central Europe. Vol. 2.] xii + 663 p. 335 fig. Paul Parey: Berlin, 1923.—This volume is chiefly devoted to the Coleoptera (612 p.), but also takes up the Anamerentoma, Thysaneuroidea, Orthopteroidea, Amphibiotica, and Neuropteroidea.—W. N. Sparhawk.

7054. EVENBY, J. *Vernskogen i Gudbrandsdalen.* [Protection forest in Gudbrandsdalen (Norway).] Tidsskr. Skogbruk 33: 1-15. 1925.—In this section of Norway, the upper limits of the forest, as a whole, are advancing. Grazing is an important local factor in lowering the limits. The composition changes in the different parishes with varying percentages of spruce, pine and birch.—W. H. Meyer.

7055. FABRICIUS. [Rev. of: WIMMER, EMIL. *Die Lehre vom Forstschutz.* [The theory of forest protection.] x + 303 p. 1 pl., 86 fig. Paul Parey: Berlin, 1924.] Forstwiss. Centralbl. 47: 232-234. 1925.—This is an 8th revised edition of the work originally written by KAUSCHINGER (1846), and subsequently revised by H. von FURST (3rd to 7th editions, 1884-1912).—W. N. Sparhawk.

7056. FORBES, A. C. *Private forestry in the Free State.* Jour. Dept. Lands and Agric. [Ireland] 24: 217-222. 7 fig. 1924.—The history of forestry in Ireland is briefly outlined. Most of the woods are privately owned and are being depleted. The present Irish situation is paralleled by a former situation in Denmark, where legislation provided for permanent forests.—Donald Folsom.

7057. FORSTER, HUGO VON. *Erfahrungen und Messungen an ausländischen Gehölzer.* [Experiences and measurements on foreign trees.] Mitteil. Deutsch. Dendrol. Ges. 33: 150-162. 1923.—A list is presented of exotic trees and, for comparison, one of native German trees, showing the circumference, height and age of the most thrifty individuals, as well as for average trees in the forest. *Pinus strobus* has been grown in Germany for many years. The lumber is not 1st class, but it can be used for various purposes. *Larix leptolepis* produces much and excellent lumber. It is more resistant to frost and certain insects than the native larch. *Abies balsamea* is not recommended. *Pseudotsuga Douglasii* is the most highly recommended of all foreign species. It produces fine lumber and is comparatively free from disease. *Abies Veitchii* is not generally recommended. *Tsuga canadensis* often forms a double stem. It grows slowly in height compared with other species. Although an excellent ornamental tree, it is not recommended for forest planting. *Chamaecyparis lawsoniana* grows rapidly when standing alone, but more slowly in the forest. It produces good timber but it is doubtful whether it should be grown for this purpose. *Abies brachyphylla* is a beautiful and hardy species and forms straight stems. *Abies concolor* is frequently recommended, but is considered adaptable only for the warmer parts of Germany.—J. C. Th. Uphof.

7058. FRÖHLICH, JULIUS. *Aus dem südosteuropäischen Urwalde.* [Notes on the virgin forests of southeastern Europe.] Forstwiss. Centralbl. 47: 199-206. 1925.—The 1,000,000 ha. of virgin forest in Yugoslavia, Bulgaria, and Rumania consist chiefly of mixed stands of beech, fir, and spruce, with small areas of pure beech or spruce. There are no extensive pure stands of fir. In general, the timber of highest quality comes from the pure stands. There is little difference in the volume of wood produced in pure and mixed stands, but because of the large crowns and smaller number of trees the volume per ha. in both is considerably below that of 100-year-old, managed forests. The average stand is 500-700 cu. m. of stem wood per ha.,

while in rare instances spruce and fir reach 800-1,000 cu. m. Many-aged stands are the rule, most of the trees being 200-300 years old, with few over 350 years. Above that age red rot (*Polyporus annosus* Fr.) so weakens the conifers that they are overthrown by the wind. Soil and humus conditions are good under both pure and mixed stands, except in high, exposed situations, where there is a tendency toward raw humus formations under conifers. Natural reproduction takes place in groups where old trees succumb to wind, lightning, or disease, and corresponds to a selection, never a shelter-wood, system in managed forests. The decaying trunks of fallen trees offer the most favorable seedbed, and frequently the spruce roots do not reach mineral soil for several decades.—Attempts to regenerate virgin stands by the shelterwood method have failed, except in pure beech, because of heavy windfall, so that clear cutting and planting has been necessary. Natural reproduction based on silvicultural principles (selection cutting) has to be disregarded because of the necessity of heavy cutting to amortize the investment in logging and transportation equipment and sawmills.—The author disagrees with Miller's assertion (See Bot. Absts. 14, Entry 1320) that there are extensive even-aged virgin stands. He also says that Miller overlooked the sincere efforts of the Rumanian Forest Service to insure reforestation of cut-over areas. Under present circumstances, it is not economically possible to give much thought to sustained yield.—*W. N. Sparhawk.*

7059. FÜRSTENBERG, MAX FRHR. VON. Die Einführung einer winterharte Form der Douglaslastanne in Deutschland. [The introduction of a winter hardy form of *Pseudotsuga Douglasii* in Germany.] Mitteil. Deutsch. Dendrol. Ges. 33: 79-90. 1923.—A description is given of Douglas fir and its varieties in its natural state, also the introduction of its seed into Germany. The forms *caesia*, *glauca* and *viridis* are discussed in detail.—*J. C. Th. Uphof.*

7060. GEETE, ERIK. Några iakttagelser från lemmelåret 1923. [Some observations from the lemming year of 1923.] Skogen 12: 43-55. Pl. 45. 1925.—In Scandinavia small rodents (mountain lemmings) appear in vast numbers and migrate seaward at intervals of about 15 years. The forest through which they pass is affected beneficially, if at all, by the tearing up of the moss cover on the ground, thus affording better soil aeration; and by the consumption of blueberry bushes (*Vaccinium myrtillus*), thus reducing the accumulation of raw humus.—*Henry I. Baldwin.*

7061. GEETE, ERIK. Sandviks sågkil och Linde-kilen. [Sandviks saw wedge and the Linde wedge.] Skogen 12: 91-95. 1925.—The first-mentioned wedge is provided with roughened surfaces to prevent it from flying away and being lost when the tree falls. The Linde wedge for splitting has the form of a screw, imparting a twisting force when driven into a log, and exerting over 80% more force than a straight-tapering wedge.—*Henry I. Baldwin.*

7062. GISBORNE, H. T. Using weather forecasts for predicting forest-fire danger. Monthly Weather Rev. 53: 58-60. 1 fig. 1925.—Three kinds of weather are significant in predicting forest fire hazard: dry weather, wet weather, and windy weather. By means of the duff hygrometer, the moisture content of the forest fuels can be measured directly and the changes due to fluctuations in weather can be noted. In Idaho, fire hazard is very closely related to the moisture content of the forest fuels. Danger periods can be predicted, based on weather forecasts, with a dependability of about 80%.—*E. N. Munns.*

7063. GORRIE, R. MACLAGAN. Recent developments in the Punjab irrigated plantations. Indian Forest. 50: 621-629. 1924.—Inadequate irrigation resulted in decreased survival and growth of plantations, but rains prevented all the work from being lost. Plantations of *Eucalyptus* cuttings were successful.—*E. N. Munns.*

7064. GREELEY, WILLIAM B. The United States as a market for tropical forest products. Reprint from Bull. Pan. American Union (April, 1925). 18 p. Illus. 1925.

7065. GROTEWITZ, CURT. Unser Wald. [Our forest.] (WILHELM BÖLSCHKE, Editor.) 181 p. 20 pl. J. H. W. Dietz Nachfolger: Berlin, 1924.—This is a collection of popular articles on German forests and trees, all of which were published in various periodicals prior to 1905.—*W. N. Sparhawk.*

7066. GUTMANN. Die Versuchsanstellung im gemischten Bestand. [Research on mixed stands.] Forstwiss. Centrabl. 47: 188-199. 1925.—Research is needed on the problems

connected with growing mixed stands, in order that management may be based on scientifically tested principles rather than on individual experience. Little has been accomplished, although the Union of German Forest Experiment Stations considered the problem in 1905, and in 1913 decided to draw up instructions for carrying on such studies. The problems to be investigated include: (1) Growth, in comparison with pure stands, including studies of the development of the stands from seedlings to maturity, and of volume production with special emphasis on quality of timber; (2) the influence of mixed stands on the condition of the soil; and (3) the best ways of establishing and handling mixed stands. Investigations may be carried on by the measurement of stands which are ready to cut, and by means of permanent sample plots. Such studies are much more difficult in mixed than in pure stands, and it is less safe to attempt to draw general conclusions from a small number of plots. Various difficulties are pointed out.—*W. N. Sparhawk.*

7067. HARBACH. *Die Bodenbesserung als Schutzmittel der Kulturen gegen schädliche Einflüsse.* [Soil improvement as a means of protecting plantations.] *Deutsch. Forstzeitg.* 40: 384. 1925.—The use of lupine in forest plantations is discussed.—*W. N. Sparhawk.*

7068. HARRER. *Pinus monticola.* *Mitteil. Deutsch. Dendrol. Ges.* 33: 1-10. 1 fig. 1923.—The characteristics of *Pinus monticola* in its native country and in Germany are compared. It is recommended for planting on exposed ridges of the North and Vorspessart; also on the sterile front mountains of the Bavarian and Bohemian forest and the northern Upperpfalz.—*J. C. Th. Uphof.*

7069. HARRIS, GARRARD. *Elements of conservation.* viii + 214 p. *Illus.* Johnson Publ. Co.: Richmond, Virginia, 1924.—Several chapters deal with forestry; conservation and improvement of soils; insects injurious and beneficial to forest and farm crops; conservation of birds, beneficial reptiles, and fish; and wild flowers. The book "is not intended to be a scientific treatise. It is merely designed to interest young folk and cause them to understand necessary facts and act upon them."—*W. N. Sparhawk.*

7070. HARTWIG, K. G. *Seewindbeständige Gehölze auf der Insel Föhr.* [Trees and shrubs resisting sea breezes on the Isle of Föhr.] *Mitteil. Deutsch. Dendrol. Ges.* 33: 223. 1923.—*Picea excelsa* does not resist sea breezes. *Abies* grows well under protection of *Picea alba* and *P. sitchensis*. The latter species, and also *Pinus montana*, *Fraxinus*, *Betula*, *Ulmus*, *Sorbus intermedia* and *Salix daphnoides* do well along the coast.—*J. C. Th. Uphof.*

7071. HELMS, J. *Naturfredning paa Aabelø.* [Nature protection on Aabelø.] *Dansk Skovfor. Tidsskr.* 9: 597-611. 6 fig. 1924.—Several areas were laid aside through the activity of the Nature Protection Commission of the Danish Botanical Society to save certain species of linden (*Tilia cordata* and *T. platyphylla*) together with oak, beech, and holly.—*W. H. Meyer.*

7072. HICOCK, HENRY W. *The Rainbow forest plantations: guide to experimental plots and report of progress.* Connecticut [New Haven] Agric. Exp. Sta. Bull. 212. 103-135. Pl. 1-8. 16 fig. 1924.—The plantation was begun in 1901, and now comprises 160 acres. The 70 plots which make up the tract are described. Direct seeding was unsuccessful because of adverse moisture conditions, while planting has been quite successful. Conifers have done well but hardwoods have usually failed. Red, white, and Scotch pine have done the best. Red oak, black locust, and chestnut have grown well but are attacked by animal or plant parasites to such an extent as to be seriously retarded.—*Henry Dorsey.*

7073. HOENTHAL, GEORGE VON. *Der Wald als Organismus.* [The forest as an organism.] *Mitteil. Deutsch. Dendrol. Ges.* 34: 1-5. 1924.—Management of the forest as an organic whole, rather than as a collection of individual trees, is discussed.—*J. C. Th. Uphof.*

7074. HOWARD, S. *Epicormic branches in sal.* *Indian Forest.* 51: 160-163. Pl. 10. 1925.—The access of light following cutting leads to the development of epicormic branches on the sal boles.—*E. N. Munns.*

7075. HUSAIN, M. SHAUKAT. *Development of sal seedlings in the Gorakhpur taungya.* *Indian Forest.* 51: 69-72. 2 fig. 1925.—The root system develops soon after germination, the tap root proceeding rapidly downward while the ground is moist. Hardpan or other mechanical obstacles result in shallow rooted trees that die before the next rains. Under favorable soil conditions growth continues throughout the year.—*E. N. Munns.*

7076. HUSAIN, M. SHAUKAT. Taungya in Gorakhpur Forest Division, Eastern Circle, U. P. Indian Forest. 51: 114-116. Pl. 8-9. 1925.

7077. ILVESSALO, YRJÖ. The forest resources of Finland. Bank of Finland Monthly Bull. 1925²: 21-29. 6 fig. 1925.

7078. IMPERIAL INSTITUTE COMMITTEE FOR TIMBERS. Empire timbers for motor bodies. Bull. Imp. Inst. 22: 149-152. 1924.—Notes are given on the results of tests of the value for motor body making of the following woods:—sapele mahogany (*Entandrophragma* sp.), iroko (*Chlorophora excelsa*), crabwood (*Carapa guianensis*), gurjun (*Dipterocarpus turbinatus*), white bombwe (*Terminalia catappa*), Indian white mahogany (*Canarium* sp.), and white chuglam.—L. A. Kenoyer.

7079. IMPERIAL INSTITUTE, DIRECTOR. British Guiana woods for paper-making. Bull. Imp. Inst. 22: 14-26. 1924.—Tests of 13 woods were made to determine their suitability for paper-making. They were *Diospyros guianensis*, *Tabebuia* sp., *Jacaranda copaia*, a specimen of Leguminosae, *Spondias lutea*, *Pithecolobium trapezifolium*, *Schefflera depressa*, *Diplostropus* sp., *Triplaris surinamensis*, *Cecropia juraniana*, *Euterpe edulis*, *Mauritia flexuosa* and *Montrichardia arborescens*. All were found suitable except the last 3, which yield too small an amount of pulp to be used profitably.—L. A. Kenoyer.

7080. IMPERIAL INSTITUTE, DIRECTOR. British Honduras timbers, Parts II & III. Bull. Imp. Inst. 22: 1-14; 397-413. 1924.—The mechanical and working qualities of 10 timbers are described. They are bullet wood (*Terminalia buceras*), nargusta wood (unidentified), pine (*Pinus caribaea*), tubroos wood (*Enterolobium cyclocarpum*), waika chewstick (unidentified), quamwood (*Schizolobium* sp.), cotton wood (*Bombax* sp.), white moho (*Hibiscus* sp.), cypress (*Podocarpus coriacea*), and sapodilla (*Achras sapota*).—L. A. Kenoyer.

7081. IMPERIAL INSTITUTE, DIRECTOR. Investigations of paper-making materials. Bull. Imp. Inst. 22: 418-433. 1924.—The following materials were analyzed to determine their suitability for making paper: bamboo (*Bambusa nana*) from Mauritius, elephant grass from Sierra Leone, bardy reed from Iraq, *Costus afer* from Uganda, *Amomum granum-paradisi* from Uganda, *Abutilon tortuosum* from South Africa, waste cotton bolls from Egypt, and arrowroot (*Maranta arundinacea*) refuse from St. Vincent.—L. A. Kenoyer.

7082. IMPERIAL INSTITUTE, DIRECTOR. The character of Indian myrobalans. Bull. Imp. Inst. 22: 123-134, 413-417. 1924.—Thirty-seven samples of *Terminalia* fruits from Dehra Dun, 11 from Madras and 1 from Burma were analyzed to determine their tanning value. Most of the samples were *T. chebula*, but 2 or 3 other genera were represented. Wide differences were found among the varieties of the same species, the tannin content ranging from 20 to 49%. Further studies along this line are desirable with a view to isolating strains superior to those that furnish the commercial product.—L. A. Kenoyer.

7083. IMPERIAL INSTITUTE, DIRECTOR. The coolibah timber of western Australia. Bull. Imp. Inst. 22: 280-284. 1924.—The results of mechanical and working tests of coolibah (*Eucalyptus microtheca*), an exceedingly hard and tough wood, are given. Its uses would be limited, but if carefully seasoned it might be useful for lining propeller-shaft tubes.—L. A. Kenoyer.

7084. JUNACK. Wie schützt man sich bei Neuaufforstung von infolge Eulenfrasses nötigen Grosskahlschlagsflächen gegen die spätere Waldbrandgefahr? [Protection of extensive young plantations against fire.] Deutsch. Forstzeitg. 40: 339-341. 1 fig. 1925.—A network of roads lined with narrow strips of birch trees is recommended.—W. N. Sparhawk.

7085. KEITH, CHARLES S. Lumber statistics—their interpretation and use. Yale Univ. School Forestry Lumber Indust. Ser. 5. 1-29 p. New Haven, Connecticut, 1925. (Reprinted in Lumber World Rev. 48²: 25-29. 1925.)—Trade associations collect and disseminate statistics on costs, production, sales and markets in order that members may understand fundamental economic facts and tendencies in their industry. From the standpoint of economics "cost" of stumpage should be value at time of conversion, but accountants use the actual price paid. The difference between the 2 figures is due to fluctuations of money value and appreciation in timber values. This and other factors cause wide variations in production costs at different mills. Statistics aid in comparing costs and gauging competition, and in predicting price movements.—C. E. Behre.

7086. KLEINSTÜCK, M. Ueber Holzfarbung an lebenden Bäume. [Wood staining in living trees.] *Mitteil. Deutsch. Dendrol. Ges.* 33: 52-54. 1923.—The Boucherie method of staining standing timber is described. A 1% solution of the stain in water is forced into holes bored through the stem. Methylin blue and malachite green stain birch uniformly, whereas eosin stains the wood unevenly. The dyes must be easily soluble in water, resistant to light, and they must diffuse readily through the wood. Staining of deciduous trees can be accomplished only in summer, while conifers were stained even late in autumn, during dry, warm weather.—*J. C. Th. Uphof.*

7087. KLÖCK. Zur Lösung der Nonnenbekämpfungsfrage auf biologischen Wege. [Biological method of combating the nun-moth.] *Forstwiss. Centralbl.* 47: 241-245. 1925.—The author's experiments lead him to believe that the so-called "Polyeder" disease which stops nun-moth (*Lymantria monacha*) epidemics, can be spread artificially by scattering leaf litter from stands where it is prevalent under stands where the nun is active. In case no infected litter is available, he believes it possible to develop the disease in a comparatively short time by exposing weakened caterpillars to the action of the causative microorganisms (Chlamydozoa), which are normally present in forest litter.—*W. N. Sparhawk.*

7088. KÜHL, HUGO. Die natürliche und künstliche Edelfarbung des Holzes. [Natural and artificial staining of wood.] *Mitteil. Deutsch. Dendrol. Ges.* 34: 239-241. 1924.—Gases from sulphurous acid and ammonia in the atmosphere affect the color of wood. NH_4Cl can be used successfully in wood containing tannin. The writer impregnated tannin-free wood with diluted solutions of tannin and afterward treated the wood with ammonia. The violet and ultraviolet rays in alpine regions may also affect the color of the wood, as has been demonstrated in the laboratory.—*J. C. Th. Uphof.*

7089. KYNOCH, W., AND J. A. CODERRE. Creosote treatment of jack pine and eastern hemlock for cross-ties. *Dept. Interior Canada, Forest. Branch Bull.* 67. 1-24. Pl. 1-7, fig. 1. 1919.—Satisfactory penetration of creosote oil was secured in jack pine heartwood by the ordinary commercial processes. Satisfactory penetration of eastern hemlock heartwood was secured only by the "incision" method, which is being patented.—*L. H. Pennington.*

7090. LANGER. Aushieb von Eichenüberhältern nach Kronenabschuss. [Blowing off the tops preliminary to cutting old oaks.] *Forstwiss. Centralbl.* 47: 245-252. 1925.—To minimize damage to young growth, it is desirable to remove the crowns of the larger oaks before felling. This can be done by means of explosives more cheaply than by hand.—*W. N. Sparhawk.*

7091. LARSEN, J. A. Forest fire season at different elevations in Idaho. *Monthly Weather Rev.* 53: 60-63. 1 fig. 1925.—The length of fire season shortens progressively from 6 months on the prairies at lower elevations to 2½ months in the subalpine mountain region. This corresponds closely with the march of temperature and rainfall in the different zones. During the fire season the daily mean temperature is 50°F. or more.—*E. N. Munns.*

7092. LINDMAN, ARVID. Skogsveckan öppnas. [Forest Week opens.] *Skogen* 12: 65-67. 1925.—Forestry is 100 years old in Sweden, and has made great strides. In the future the forester should concentrate on eliminating overcutting, and increasing production.—*Henry I. Baldwin.*

7093. MARTINEZ, MAXIMINO. El árbol del bálsamo. [The balsam tree.] *México Forest.* 3: 57-59. 1 fig. 1925.—This is a brief description of *Toluifera (Myroxylon) pereirae* (Klotzsch.) Baill., the Peru balsam that is derived from it, and the method of obtaining the balsam.—*W. N. Sparhawk.*

7094. MERENDI, A. Come elevare la produzione dei forteti. [How to increase production in the woodlands of the coastal region (Tuscany).] *L'Alpe.* 2nd Ser. 9: 225-232. 1922.—These coppice forests are important sources of firewood and charcoal. Their area is likely to decrease as land is needed for other purposes, and their present yield is much less than could be obtained under careful management. On State lands the rotation is 16-25 years, and on private lands 8-10 years. Maximum yields of usable material would be obtained with rotations slightly less than those in the State forests. Oak, ash, and elm should be favored, and thinnings should be made early so as to leave only those sprouts that are to stand until the end of the rotation.—*W. N. Sparhawk.*

7095. METCALF, WOODBRIDGE. *Growth of eucalyptus in California plantations.* California Agric. Exp. Sta. Bull. 380. 4-61. 1924.—Blue gum (*E. globulus*) grows the fastest of any species of *Eucalyptus* thus far planted in California. On the basis of 67 groves measured, the mean annual growth is 271 solid cu. feet per acre, or 3.02 standard cords. The best grove averaged 450-550 cu. feet per acre per annum, while several growing on poor, sandy, exposed or dry sites grew at a rate less than 90 cu. feet. The yield of 10 year-old plantations was 6100, 3400, and 2050 cu. feet per acre on good, medium, and poor sites, respectively. Groves of red gum and gray gum have averaged about 100 cu. feet per acre per year.—Red gum is unsatisfactory because of its crooked habit of growth. Both species are more drought-resistant than blue gum and produce wood which is more durable in the soil. Sugar gum is very drought-resistant but subject to frost injury. The 17 groves measured made an average mean annual growth of 110 cu. feet, or 1.22 cords, per acre. The wood of California-grown *Eucalyptus* has been used for fuel, charcoal, insulator pins and other turned articles. *Eucalyptus* lumber checks and warps excessively. Oil distilled from the leaves has not, thus far, come up to U. S. P. requirements. The value of standing trees varies from \$1 to \$4 a cord. An appendix shows how to calculate the volumes of trees, to classify sites, and to raise *Eucalyptus* trees from seed.—A. R. C. Haas.

7096. MOLL, FRIEDRICH. *Von Holzkonservierung.* [Wood preservation.] Forstwiss. Centralbl. 47: 225-230. 1925.—The importance of preservative treatment as a means of reducing Germany's timber requirements is emphasized.—W. N. Sparhawk.

7097. MONROY, JOH. ALBR. VON. *Wirtschaftliche Betriebsführung in der Forstwirtschaft.* [Scientific management in forestry.] (2) + 44 p. 67 fig. VDI-Verlag G. m. b. H.: Berlin, 1925.—This is a study of the application of the principles of the Taylor system to forest planting, logging, and soil working.—W. N. Sparhawk.

7098. MORTON, B. R. *The care of the woodlot.* Dept. Interior Canada, Forest. Branch Bull. 69. 1-52. 1920.—This is intended for the farm woodlot owner in eastern Canada. Information is given under the following sub-heads: protection, thinning, improvement cuttings, purning, reproduction, collection of seed, the farm nursery, notes on various species of trees, and tables of distances and quantities.—L. H. Pennington.

7099. MORTON, B. R. *Tree-repairing.* Dept. Interior Canada, Forest. Branch Bull. 73. 1-22. Fig. 1-27. 1922.

7100. MÜLLER, ALFRED. *Forstliche und dendrologische Wirkungen naturgemässer Waldsäume.* [Forestry and dendrological effects of natural forest margins.] Mitteil. Deutsch. Dendrol. Ges. 34: 99-102. 1924.—The margin of every forest which has not been touched by man shows a peculiar structure, embracing trees and shrubs of different height, as a result of the influence of wind, light and the associated species. Artificial forests show such conditions only sporadically. Artificial margins should be formed along parts of the forest which are exposed to wind, using shrubs or trees which are of economic as well as ornamental value. In forestry, little attention has been given thus far to this matter.—J. C. Th. Uphof.

7101. MÜLLER, UDO. *Lehrbuch der Holzmesskunde.* [Textbook of forest mensuration.] 3rd ed. xvi + 416 p. 126 fig. Paul Parey: Berlin, 1923.—The book deals with the principles, methods, and instruments used in measuring, ascertaining the age, and determining the growth of single trees and of stands. The study of yields is not included.—W. N. Sparhawk.

7102. MÜLLERS. *Ueber Gewinnung von Koniferensamen.* [Collecting seed of conifers.] Mitteil. Deutsch. Dendrol. Ges. 34: 109-112. 1924.—Seed should not be collected until fully ripe. Seed from the sunny side of the tree are better than those which were developed in the shade. Seed kept in the cones will remain viable longer than cleaned seed. Best results are obtained by sowing fairly soon after harvest. Seed which have been stratified in the fall germinate better the following spring than if they were kept dry. This is especially the case with hard coated seed such as *Taxus baccata*. Fresh *Juniperus* seed when sown in autumn will germinate the following spring, while spring sown seed germinate a year later. For sowing out-of-doors the soil should be well warmed by the sun. Seed received from other countries should be planted out at once regardless of the date.—J. C. Th. Uphof.

7103. MÜNCH. Anbauversuch mit Douglasfichten verschiedener Herkunft und ander Nadelholzarten. [Experiments with Douglas fir of different origin and other conifer species.] Mitteil. Deutsch. Dendrol. Ges. 33: 61-79. 1923.—The writer describes in detail the growing of Douglas fir in Germany. The seed were derived from various localities in the U. S. A. The climatic conditions of these localities are compared with those in Germany.—*J. C. Th. Uphof.*

7104. MÜNCH. *Fagus orientalis*, die Kaukasus-Buche, im deutschen Walde. [*Fagus orientalis* in the German forest.] Mitteil. Deutsch. Dendrol. Ges. 33: 57-61. 2 fig. 1923.—Young trees of *F. orientalis* grow faster than *Fagus sylvatica*. The buds unfold so early that they are liable to damage by frost. As European beech is susceptible to drought, frost, and injury by animals, it takes decades to form a closed stand, and *F. orientalis* should be tried.—*J. C. Th. Uphof.*

7105. MUUS, F. Meddelelse fra Handelsudvalget. [Report of the Commerce Commission.] Dansk Skovfor. Tidsskr. 9: 663-672. 1924.—This is a review of business conditions affecting forestry in Denmark, with timber prices for Dec. 20, 1923 and Aug. 1, 1924.—*W. H. Meyer.*

7106. NIRSCHL, J. Die Forstwirtschaft in Niederländisch-Indien. [Forestry in the Dutch East Indies.] 120 p. 1 map. K. F. Koehler: Leipzig, 1920.—Java has 2,900,000 ha. of forest, or 22% of the land area. Of this, 721,812 ha. (end of 1916) was teak forest, most of it reserved and 203,000 ha. managed under working plans; other ("wild") forest covered 2,181,000 ha., of which 1,265,000 ha. was reserved but not intensively managed. About 70 pages are devoted to a description of the teak forests, their history, composition, silviculture, and utilization. Teak is the most widely used timber, and some is exported. The more than 30,000,000 population requires very little wood, however, and although consumption is increasing, Java can probably supply her own needs. Forestry research was centralized when the experiment station was established at Buitenzorg in 1913, and is occupied chiefly with "practical" problems of growth, yield, thinnings, planting, and soils. It has been concluded that teak more than 50 cm. in diameter cannot be grown at a profit.—The forest area of the Outer Possessions, which has been variously estimated at 35-108 million acres, is dealt with briefly. While small areas have been reserved, these forests as a whole are subject to very little regulation. They produce some timber and large quantities of gums, resins, and other materials.—Appended tables show various statistical data.—*W. N. Sparhawk.*

7107. OFIGSBØ, O., og B. WISTH. Vernskogen i Sør-Tørndelag. [Protection forests in South Trondhjem.] Tidsskr. Skogbruk 33: 62-71. 1924.—The discussion of protection forests in Norway is continued. For each parish, the composition of the upper forests, the recession or advance of their limits, and their ownership, are given. Spruce, pine, and birch occur in varying mixtures. Heavy cutting is usually the cause of lowering of the timber line. The forests are chiefly in private ownership.—*W. H. Meyer.*

7108. OPPERMAN, A. Daekningsskov og Nabovirkninger. [The forest canopy and its silvicultural significance.] Dansk. Skovfor. Tidsskr. 9: 611-633. Fig. 13-15. 1924 (see Bot. Absts. 14, Entries 3377 & 5232).—The theories concerning the advantages of the mixed forest are discussed, as well as the work that has been done on improving and maintaining the fertility of the forest soil. Firs have been planted in Denmark since the end of the 18th century, and extensively since 1890. Experimental studies should be made on the fir species. Regulation of the cut has been attempted in several ways. It is recommended that future cuttings be made in small groups, with various modifications, thus maintaining a forest mixed in groups. To obtain good form spacing should vary with the species.—*W. H. Meyer.*

7109. OPSAHL, W. Fra Skotland. [From Scotland.] Tidsskr. Skogbruk 33: 16-35. 8 fig. 1925.—This is a report on a trip through various forests and parks of Scotland and England. Scotch pine is the only important native tree in Scotland. Many exotics have been planted during the last 100 years. Douglas fir does very well. Norway spruce yields more than European larch and Scotch pine. The planting activities of the Forest Commission are summarized.—*W. H. Meyer.*

7110. [ORLOV, M. M.] Орлов, М. М. Лесная таксация. [Forest measurements.] viii + 420 p. 50 fig. Издательство Народн. Комиссар. Землед. "Новая Деревня":

Петроград [Commissariat for agriculture: Petrograd], 1923.—This is a comprehensive treatise on the measurement of cut timber, standing trees and stands, plantations, and the growth of trees and stands. A 7-page bibliography is appended.—*W. N. Sparhawk.*

7111. OXHOLM, AXEL H. **Lumber market in the Netherlands.** U. S. A. Bur. Foreign & Domestic Commerce Trade Promotion Ser. 4. vi + 233 p. Fig. 1-35. Govt. Printing Office: Washington, 1925.—The forest conditions of the country are described in one chapter.—*W. N. Sparhawk.*

7112. P **The varieties of *Acacia arabica*.** Indian Forest. 51: 180-181. Pl. 12. 1925.—Three varieties are recognized: *babul*, *cupressiformis*, and *vediana*—*E. N. Munns.*

7113. PARKER, R. N **The cultivation of conifers in northern India.** Indian Forest. 50: 616-621, 1924; 51: 4-11, 60-67. 1925.—Species successfully planted in the Dehra Dun arboretum and elsewhere are listed. Short descriptions of the nursery troubles experienced with each and of the character of the growth are given. The plants include *Podocarpus elongatus*, *P. falcatus*, *P. gracilior*, *P. pedunculatus*, *P. Thunbergii*, *Araucaria braziliiana*, *A. Cunninghamii*, *Callitris tasmanica*, *Tetraclinis articulata*, *Cupressus arizonica*, *C. Benthamii*, *C. funebris*, *C. sempervirens*, *C. torulosa*, *Thuja orientalis*, *Juniperus chinensis*, *J. recurva*, *Agathis australis*, *Cedrus deodara*, *Taxodium distichum*, *Pinus longifolia*, *P. Armandi*, *P. excelsa*, *P. canariensis*, *P. Thunbergii*, *P. sinensis*, *P. massoniana*, *P. ponderosa*, *P. occidentalis*, *P. pinaster*, *P. sabiniana*, and *Ginkgo biloba*.—*E. N. Munns.*

7114. P[EARSON], R. S. [Rev. of: RECORD, S. J., AND C. D. MELL. **Timbers of tropical America.** xviii + 610 p. 51 pl. Oxford Univ. Press: London, 1924.] Indian Forest. 51: 130-133. 1925.—“The whole work is of extreme value and can safely be classed as a standard work, laying the basis to further development of the timber resources of the South American Continent.”—*E. N. Munns.*

7115. PETTERSON, HENRIK. **Sambandet mellan kronan och stamformed.** [The relation between the crown and stem-form.] Skogsvårdsför. Tidsk. 23: 37-79. Fig. 1-6. 1925.—Jonson's form point method, making possible the determination of an average form class for a whole stand, has aided greatly the practice of estimating, but sheds little light on the influence of different forms of cutting on yield, as affected by crown development. It can be proved mathematically from Jonson's and other data that the form point as previously developed, does not coincide with the point of effective wind pressure. The theoretical point of concentration of wind pressure can be computed by means of a logarithmic curve, and its height from the ground determined by formula.—*Henry I. Baldwin.*

7116. PORTER, O. M. **German forestry's mistake.** Indian Forest. 51: 136-138. 1925.—The present German forester is more concerned with soils than with trees because the mechanical systems of forest management formerly prevalent have impoverished the forest soils. Mixed stands, natural reproduction, and fairly long rotations appear to be coming into favor.—*E. N. Munns.*

7117. PREIJER, THIERRY. **Kapitalprobleme bei Pflanzungunternehmungen.** [Problems of capital in plantations.] Tropenpflanzer 24: 6-15, 37-49. 1921.—Timber trees and lumber production from virgin forests of southern Sumatra and southern and eastern Borneo are dealt with briefly.—*J. C. Th. Uphof.*

7118. RANGANATHAN, C. R. **Philipp's new method of constructing yield tables.** Indian Forest. 51: 95-108. Pl. 5-7. 1925.—Philipp's basic assumption is that the total volume production over any given period is constant irrespective of treatment, so long as no abnormal methods are introduced. The method of developing yield tables is described. The samples given indicate that intermediate yields gradually rise from early youth to a maximum at about 70 years, following the current annual increment. Thinnings should likewise increase in intensity as the increment rises. The advantages claimed for the method are that all healthy sample plots can be used, irrespective of previous history; data can be classified according to treatment of stands; errors will be on the safe side; and the method is not artificial and arrives at a factor common to all sites.—*E. N. Munns.*

7119. REILLY, J. [Rev. of: DUPONT, G. **Distillation du bois.** (Distillation of wood.) (Encyclopédie Léauté, 2d série) xv + 284 p. Gauthier-Villars et Cie, Masson et Cie: Paris, 1924.] Nature 115: 153. 1925.—The book will be most attractive to the general reader and science student.—*O. A. Stevens.*

7120. ROSS, N. M. **Success in tree planting.** Dept. Interior Canada, Forest. Branch Bull. 72. 1-34. 1922.—This is an account of experiments in tree planting, principally about farm buildings, in the prairie regions of Manitoba, Saskatchewan, and Alberta. A table shows the comparative growth of the most suitable trees for the prairies. These are Russian poplar, white birch, Manitoba maple, green ash, American larch, Siberian larch, Scotch pine, jack pine, lodgepole pine, and white spruce.—*L. H. Pennington.*

7121. RUDEN, I. **Beretning om en reise i Tyskland og Østerrike sommeren 1924.** [Report on a journey in Germany and Austria during the summer of 1924.] Tidsskr. Skogbruk 33: 73-85. 1924.—In north Germany, the even-aged character of poorly formed pine is very noticeable. Clear cutting in groups, followed by planting, is the usual method of reproduction. In middle Germany, spruce becomes more prominent. The Hintersee forest at Salzburg has a motor railway transportation system. Several other forests are briefly described. *W. H. Meyer.*

7122. S. **Berlins Waldbesitz** [Berlin's forests.] Deutsch. Forstzeitg. 40: 358-359. 1925.—The city of Berlin owns 21,173 ha. of forest, of which 19,162 ha. are managed for timber production, the rest as parks, playgrounds, etc. About 20% of the stands are over 200 years old.—*W. N. Sparhawk.*

7123. SCH. **Ausbildung der badischen Förster.** [Training of foresters in Baden.] Deutsch. Forstzeitg. 40: 456-457. 1925.—Until recently Baden required but little technical training for forest rangers. Now a 16-weeks' training course has been established at Karlsruhe, to which may be admitted candidates who have passed an examination based on common school education and who have also worked at least 500 days in the woods.—*W. N. Sparhawk.*

7124. SCHLIEFER, M. E. VON. **Eigene Samengewinnung.** [Seed collecting.] Mitteil. Deutsch. Dendrol. Ges. 33: 169-175. 1923.—Emphasis is laid upon the time of ripening, and methods of collecting and storing seed of several forest trees. *Taxus baccata* should be harvested early, before the birds eat the fruit. *Pseudotsuga Douglasii* ripens in September; the cones open very early and, therefore, should be collected, as soon as possible. In young trees the seed are often infertile. *Picea excelsa* seed ripen about January 1, and should be harvested about that time. The cones of *Larix* are hard to remove from the tree, and are therefore cut off with pruning shears early in the spring and placed in the sun to open. They close again during rainy weather. Cones of *Cedrus* usually take 2-3 years to ripen. They are cut off and open slowly, after which they are broken up, and the pieces are soaked in water for 2-3 hours to release the seed. They have to be sown soon after collecting. Gathering seed of other species is described.—*J. C. Th. Uphof.*

7125. SCHULENBURG, ALBRECHT VON. **Verwendung der Pinus montana zur Windmantelanlage an Waldrändern auf ausgehagerten Boden.** [Use of *Pinus montana* on exhausted soils for protection against wind.] Mitteil. Deutsch. Dendrol. Ges. 34: 103-104. 1924.—This species is grown successfully for shelter belts along the borders of the Hadersleben forest on the stormy coast of western Jutland. Seed should be selected from trees which naturally tend to grow low rather than high.—*J. C. Th. Uphof.*

7126. SCHWAPPACH, [ADAM]. **Die Kommerzialisierung der österreichischen Bundesforsten.** [Commercializing the Austrian State forests.] Deutsch. Forstzeitg. 40: 419-421. 1925.—An outline of the law is given under which the State forests are to be turned over to a public corporation, on a basis something like that on which the German government railways are operated. The move has aroused great opposition, as there is danger that silvicultural considerations will be subordinated to commercial objectives. This is particularly serious because most of the Austrian forests are protection forests that should be maintained regardless of financial profit.—*W. N. Sparhawk.*

7127. SCHWAPPACH, [ADAM]. [Rev. of: GROSS. **Anbauversuche mit Kiefern verschiedener Herkunft im Tharandter Reviere.** (Experiments in growing pine from various sources at Tharandt.) Mitteil. Sachs. Forst. Versuchsanst. 2: 185 ff. 1924 (?)] Deutsch. Forstzeitg. 40: 421-423. 1925.—The reviewer compares the results at Tharandt with those obtained in Chorin, Hessen, Holland, and Sweden. The experiments have been running for 17 years, which is believed long enough to give conclusive results.—*W. N. Sparhawk.*

7128. SCHWERIN, FRITZ VON. *Waldverwüstung in Nordamerika*. [Forest destruction in North America.] *Mitteil. Deutsch. Dendrol. Ges.* 33: 215-217. 1923.

7129. SCHWERIN, FRITZ VON. *Welche Form der Douglasfichte sollen wir anpflanzen?* [Which form of Douglas fir should we grow?] *Mitteil. Deutsch. Dendrol. Ges.* 33: 90-97. 1923.—The typical *viridis* form is winter hardy in Germany. It gives the largest yields and is said to be the most promising forest tree in Germany. The form *caesia* is better adaptable to northern Europe, where the *viridis* is less hardy.—*J. C. Th. Uphof.*

7130. SEAMAN, L. N. *Anogeissus acuminata* (yon). Report on green material tested under project No. 1. *Indian Forest.* 51: 151-159. 1925.—The wood of yon was tested for static and impact bending, compression parallel and perpendicular to grain, hardness, and shear and tension. It is shown to be superior to *Fraxinus americana* and *Hicoria glabra*.—*E. N. Munns.*

7131. SHER SINGH, M. S. *The fir forests of the Pir Panjal, Kashmir*. *Indian Forest.* 51: 49-53, 108-113. 1 fig. 1925.—The forests are described. Natural regeneration follows heavy cuttings. The distinguishing features of the Kashmir climate are light summer rainfall, heavy winter rainfall, and a heavy fall of snow. These factors favor coniferous forests, and help to explain the distribution of *Abies pindrow*. Much damage is caused by overgrazing.—*E. N. Munns.*

7132. SHINN, CHARLES H. *Let's know some trees*. U. S. A. Dept. Agric. Misc. Circ. 31. 1-16. Fig. 1-13. 1925.—The principal California trees are described in simple language.—*W. N. Sparhawk.*

7133. SIBILLE, A. *Le peuplier*. [The poplar.] 100 p. 52 fig. Librairie Agricole de la Maison Rustique: Paris, 1925 (?).—The growing of various species of poplar for timber is recommended. Examples are cited to show that a net annual profit of 4 francs per tree (or about 720 francs per ha.) can be made.—*W. N. Sparhawk.*

7134. SMYTHIES, E. A. *Von Mantel's formula*. *Indian Forest.* 51: 139-142. 1925.—The application of Von Mantel's formula to partial growing stocks produces appreciable errors, in some forests as much as 37% of the final yield.—*E. N. Munns.*

7135. SOWERBY, ARTHUR DE C. *Approaching desert conditions in North China*. *China Jour. Sci. and Arts* 2: 199-203. 4 pl. 1924.—North China was formerly covered by extensive forests. While the Chinese have cut away the forests the barren state of the country is in part attributed to increasing aridity, as evidenced by the advance of the sand desert along the Great Wall and elsewhere. The wholesale planting of trees and conservation of water supplies are means of warding off for a time conditions of increasing aridity.—*W. C. Lowdermilk.*

7136. SOWERBY, ARTHUR DE C. *Famine, floods and folly*. *China Jour. Sci. and Arts* 2: 395-399. 6 pl. 1924.—In 1917 North China was visited by an unprecedented flood causing great losses in property and life; in 1924 even worse floods swept over North China, down the Min River and deluged the lowlands along the Yangtze. These disasters are attributed to the destruction of the former extensive forest cover in the mountains.—*W. C. Lowdermilk.*

7137. SOWERBY, ARTHUR DE C. *Forestry in China*. *China Jour. Sci. and Arts* 2: 299-303. 8 pl. 1924.—The Chinese have not shown the same skill and providence in the treatment of the great expanses of non-agricultural land for forest production as in the treatment of agricultural lands for food supplies. The demand of the prevailing type of architecture and for coffins requires the importation of large quantities of timber. In the territory north of the Yangtze River and in Southeast China, some natural forest areas still exist, but they are being destroyed for want of intelligent treatment. Nothing has been done effectively to remedy the increasing blasting results of forest denudation on the mountain and hill lands.—*W. C. Lowdermilk.*

7138. STEIGER. *Der Förster-Ausbildungs-Bestimmungen der Preussischen Staatsforstverwaltung (FAB) vom 1. April 1925*. [Regulations regarding training of foresters for the Prussian State Forest Service.] *Deutsch. Forstzeitg.* 40: 437-450. 1925.—The official requirements as to education, examination, training, and appointment are given in detail. Before appointment to a regular position, the candidate must have had a common school education, a year's preliminary training under a forest officer, a year at forest school, and 5 years' apprenticeship in the State Forest Service.—*W. N. Sparhawk.*

7139. STOCKER, C. L. *Annual report of the Forest Department (British Honduras) for the year ending 31st March, 1924.* 18 p. 1 map. Waterlow & Sons, Ltd.: London, 1924.—The principal activities consisted of exploration, establishment of reserves (amounting to about 176,700 acres at the end of the year), improvement cuttings to favor the growth and reproduction of mahogany and rosewood, and preparation of plans for exploitation of mahogany, miscellaneous hardwoods, and pine.—*W. N. Sparhawk.*

7140. STONE, HERBERT. *Étude descriptive sur les bois utiles de la Guyane française.* 7 + 416 p. Faculté des Sciences, Musée Colonial: Marseille, 1923.

7141. STONE, HERBERT. *Les bois utiles de la Guyane Française.* [The useful timbers of French Guiana.] *Ann. Mus. Colonial Marseille.* 3d Ser. 4²: 39-135. 1916 [1917]; 5³: 1-159. 1917; 6²: 1-68. 1918; 8²: 1-98. 7 pl. 1920 [1922]; (see Bot. Absts. 13, Entry 6534); 8³: 1-39. 1920 [1924].—This is a compilation and critical analysis of all existing data on the woods of French Guiana, supplemented by the results of the author's own studies on several collections.—*W. N. Sparhawk.*

7142. SÜCHTING, H. *Die Humusfrage in der Forstwirtschaft.* [The humus problem in forestry. Deutsch. Forstzeitg. 40: 370-375, 395-397, 399. 1925.—The nature and origin of humus are discussed, with special reference to the formation of sour (raw) humus and its unfavorable effect on forest production. A large proportion of German forest soils are deficient in lime and therefore must be carefully handled to prevent raw humus accumulation. Such are soils originating from various granites, gneisses, quartzites, shales, sandstones, and conglomerates, and the diluvial sands of glacial origin. The best silviculture on these soils involves the use of mixed stands of uneven age, selection or strip-selection cutting, and careful regulation of density in relation to soil and climatic conditions, especially in youngstands. An important subject for investigation is the proper density of stocking for stands below 20-25 years, for it is known that excessive density causes raw humus to be formed. Studies on artificial liming are also needed. Other measures that have been suggested include mechanical mixing of humus and mineral soil, raking the humus into rows and liming the cleared strip, and complete removal of the humus to be used with lime for agricultural compost.—*W. N. Sparhawk.*

7143. TASSINARI, GIUSEPPE. *Il prezzo di macchiatico e le sue variazioni in rapporto al prezzo di mercato e al costo delle lavorazioni e dei trasporti.* (2° Contributo.) *Indagini eseguite per la regione toscana.* [Stumpage values in relation to sale value of timber products and costs of logging and transport (Tuscany).] *Ann. R. Ist. Superiore Forest. Nazion. Firenze* 6¹: 205-234. 1920-1921.—As a result of large increases in costs of logging and transportation, prices of fuelwood in 1920 showed greater increases over pre-war prices than was the case with stumpage values. For construction timber, market prices and stumpage increased at about the same rate.—*W. N. Sparhawk.*

7144. TOUMEY, J[AMES] W. *Foundations of silviculture upon an ecological basis.* Part I.—The site factors. 171 p. (mimeographed). Edwards Bros.: Ann Arbor, Michigan, 1924.

7145. TREVOR, C. G. *The normal sal selection forest.* *Indian Forest.* 50: 638-644. Pl. 24-25. 1924.—Curves have been drawn which indicate the number of trees on the average acre for fully stocked stands of sal when managed under the selection system.—*E. N. Munns.*

7146. TUGGUSE, M. S. *Some methods for securing the germination of teak seed.* *Indian Forest.* 51: 163-171. Pl. 11. 1925.—Various methods tried to encourage germination of teak seed (*Tectona grandis*) have failed. Teak usually delays its germination for 1 or more seasons. Advantage of this fact is taken by exposing the seed to the elements for a year. Such seed germinates well and the seedlings develop rapidly.—*E. N. Munns.*

7147. UGARTE, JESÚS. *Dasometria. Tratado de dendrometria.* [Textbook of dendrometry.] 363 p. 101 fig. Cleto Vallinas: Madrid, 1923.—Dendrometry is defined as that branch of dasometry (forest measurements) which deals with the measurement of trees and stands, or of forest products. Measurements of growth and yield constitute a distinct branch, epidrometry.—*W. N. Sparhawk.*

7148. VANSELOW. *Zwei Waldordnungen aus dem 16 Jahrhundert.* [Two forest ordinances of the 16th century.] *Forstwiss. Centralbl.* 47: 218-225. 1925.—Two ordinances of the Electorate of Mayence, dated 1517 and 1550, are given verbatim. They illustrate the

tendency of the Electorate to assume control over all forests, even those of private owners, and also the policy of better protecting the forests for the benefit of posterity, both by means of stricter policing and through prescriptions for silvicultural treatment.—*W. N. Sparhawk.*

7149. WECHSEL, ANT[ONIE] TE. *Het hout. Eigenschappen, winning en gebruik.* [Timber: Its properties, methods of conversion, and utilization.] (2) + 272 p. £02 fig. P. van Belkum: Zutphen, 1923.—The 1st part takes up the structure and the physical, chemical, and mechanical properties of wood. The 2nd part treats of the felling, cutting up, and transportation of timber; the classification, grading, and measurement of logs and timber products; and methods of selling timber.—*W. N. Sparhawk.*

7150. WIESE, FRITZ. *Die Nadelhölzer Mecklenburg-Schwerins.* [The conifers of Mecklenburg-Schwerin.] Mitteil. Deutsch. Dendrol. Ges. 33: 98-133. 1923.—The history of colonization and the development of forestry from its beginning are described. After 1870-1871 many new species of conifers were introduced. The writer mentions the behavior and use of 76 species of conifers which are grown in the region.—*J. C. Th. Uphof.*

GENETICS

ORLAND E. WHITE, *Editor*

(See also in this issue Entries 6816, 6845, 6894, 6901, 6905, 6936, 7234, 7240, 7242, 7336, 7338, 7354, 7370, 7476, 7503, 7534, 7559)

7151. ALLEN, EDGAR, AND EDWARD A. DOISY. Continuation of secretion of the ovarian follicular hormone by the human corpus lutea. *Proc. Soc. Exp. Biol. and Med.* 22: 303-305. 1925.—Earlier work had indicated the absence of follicular hormone in the corpora lutea from various mammals. Present studies indicate the continued secretion of the hormone in the human corpus luteum. Lipoid extracts of human placenta and chorionic vesicles are also found capable of greatly increasing the thickness of the vaginal epithelium. These active extracts are substitutes for this ovarian secretion, not merely agents which influence the growth and secretion of intact ovaries.—*Oscar Riddle.*

7152. BANTA, ARTHUR M. The relation between previous sexual reproduction and the production of male offspring in *Moina macrocopa*. *Amer. Nat.* 59: 50-61. 1925.—New and old stocks of *Cladocera* were reared under similar environmental conditions to determine whether or not internal factors (the innate sexual cycle of Weismann) influence the production of males. A comparison of the broods of uncrowded mothers of the 3rd generation with those of the 294th generation showed no significant difference in the percentage of males produced. When the mothers of either new or old stocks were crowded the percentage of males produced increased approximately 3-fold. It is concluded that exclusively parthenogenetic reproduction for an indefinite number of generations does not modify the tendency to produce males in *Moina macrocopa*.—*Lloyd Ackerman.*

7153. BANTA, ARTHUR M., AND L. A. BROWN. Rate of metabolism and sex determination in *Cladocera*. *Proc. Soc. Exp. Biol. and Med.* 22: 77-79. 1924.—The production of males in *Moina macrocopa* is associated with a lowered rate of metabolism of the mother during maturation of the eggs. Male production was found to be associated with low temperatures and overcrowding and was also favored by treatment of the mothers with CO₂, uric acid, and chloretone. It is assumed that the rate of metabolism, or some phenomenon associated with it, in some manner alters the maturation division and thus determines the sex of the young.—*Lloyd Ackerman.*

7154. BLACKBURN, K. B., AND J. W. H. HARRISON. Genetical and cytological studies in hybrid roses I. The origin of a fertile hexaploid form in the *pimpinellifoliae-vellosae* crosses. *British Jour. Exp. Biol.* 1: 557-570. Pl. 1-2. 1924.—*Rosa Sabini* and *R. Wilsoni* are reciprocal crosses between the tetraploid *R. pimpinellifolia* and some unbalanced pentaploid *Tomentosa* form. *R. Sabini*, produced from an egg of *Tomentosa* with 28 chromosomes and pollen of *R. pimpinellifolia* with 14 chromosomes, shows at meiosis a behavior characteristic of many rose hybrids. *R. Wilsoni* produced from an egg of *R. pimpinellifolia* with 14 chromosomes and pollen of *Tomentosa* with 7 chromosomes, is not triploid as expected but octoploid and shows

no irregularities during meiosis. It has, like *Primula Kewensis*, doubled its chromosome number and like this hybrid it has attained fertility.—A. E. Longley.

7155. BLAKESLEE, A. F., J. BELLING, AND J. T. BUCHHOLZ. **Interchromosomal mutations.** Carnegie Inst. Washington Yearbook 22: 88-96. 1922-1923. [1924].—An attempt has been made to determine the causes that lie back of the differentiation of the simple trisomic types of mutants into primary and secondary groups. If each of the $(2n + 1)$ mutants is caused by the presence of an extra chromosome in a different one of the 12 chromosomal sets there would only be 12 $(2n + 1)$ mutants expected. However, there are over 20 mutants with a single extra chromosome. These have been arranged in 12 groups. Six of the groups have a single member and 6 have a main mutant and 1 or more varieties. This classification is supported, by similarity in external appearance, similarity in internal anatomy (found by E. W. Sinnott), by study of the size relations between the main mutants and their varieties (made by John Belling), and the fact that the variety regularly throws a small percentage of its main mutant in the offspring, while the main mutant does not throw its variety; also, by the fact that in 1 group the main mutant and its variety give the same trisomic ratios for a Mendelian factor. The main mutants are (with 1 exception) the only $(2n + 1)$ types thrown by triploid plants. A study of the main mutants and their varieties show "that each of the chromosomes contains factors which affect the somatic characters of habit of growth and of intensity and distribution of purple pigmentation, the various mutants varying in plus or minus direction from the balanced condition in normal diploids."—Other mutant types in *Datura* are discussed. Haploids have occurred and have been shown to be probably due to true parthenogenesis of the reduced egg. Parthenogenesis has been observed in tetraploids when they have been crossed with pollen from diploids. Chromosome aberrations are found to be the cause of sectorial chimeras. Plants with abnormal branches have been studied cytologically and the abnormal branch found to be a chromosomal deficiency of the type $(2n - 1)$. A whole plant has been discovered of this $(2n - 1)$ type. Other diploid plants have produced tetraploid $(4n)$ branches. This paper also includes a short summary of the study of the rate of pollen-tube growth in *Datura* mutants. Buchholz has found that pollen-tube growth of the mutants is slower than in the case of normals. The pollen-tubes having n chromosomes from each mutant penetrate to about the same distance as normal pollen-tubes, while those having $(n + 1)$ chromosomes either fail to germinate or lag behind. Mention is made of the irregular segregation in chromosomes which occurs in triploid plants. Belling has found non-disjunction to be of common occurrence among tetraploid plants. Usually the ratio of regular disjunction to non-disjunction is 35:1, for each set of 4.—Betty P. Watt.

7156. BLARINGHEM, L. **Études sur la sélection du Lin. II.—Recherches statistiques sur la dégénérescence des Lins à fibres.** [Studies in the selection of flax. II.—Statistical researches concerning degeneration of fiber in flax.] Rev. Bot. Appl. et Agric. Coloniale 4: 633-651. 2 fig. 1924.—Two kinds of degeneration in flax are recognized, 1 relating to the genetical constitution of (pure) lines and the 2nd to that of mixed populations introduced from Russia to France and cultivated in France as indigenous. The 2nd kind is of importance to agriculture. Flax plantings were made from newly imported Russian seed and from Russian seed grown in France for a few years, both under open and protected conditions. From each of the 4 lots 60 wholly mature plants were chosen and studied in comparison with the run of the remainder. Notes were taken upon dissepimental ciliation, shape of boll, and height of plant. The indigenous (French grown) lines showed greater ciliation and less height in all cases than did those grown from newly imported Russian seed. In shape of boll, to which the author attaches much importance as a distinguishing character, indigenous lines carried from 11 to 12% of individuals with flattened bolls as against 7.8 to 10.3% secured from Russian seed. No means, standard deviations or probable errors are given. (See also Bot. Absts. 13, Entry 2495.)—L. R. Waldron.

7157. BREITENBECHER, J. K. **An apterous mutation in Bruchus.** Biol. Bull. [Woods Hole] 48: 166-170. 1925.—Seven females without wings appeared in a culture of *Bruchus quadrimaculatus*, the "four-spotted cowpea-weevil." The character is inherited as a sex-limited recessive, appearing phenotypically in females only. It has a high degree of sterility, possibly from the stock in which it originated, and lower viability than normal.—Anna R. Whiting.

7158. COWDRY, E. V. **The value of the study of mitochondria in cellular pathology.** Amer. Nat. 58: 97-114. 1924.—Mitochondria are discussed as to their occurrence, morphology, arrangement, amount, chemical constitution, nature, changes in pathological conditions, and as to outlook for further study. The author believes that "the mitochondria-cytoplasmic complex is inseparable from phenomena which we call vital." However, he believes that the problem is not solved. It will be many years before we can "even approximate to a correct interpretation of mitochondria."—*Betty P. Watt.*

7159. CROW, W. B. **Variation and species of Cyanophyceae.** Jour. Genetics 14: 397-424. Fig. 1-8. 1924.—The taxonomic characters used to distinguish orders, families, genera, and species are classed as: internal structure of the archiplast [cell]; mode of division; pigmentation of the archiplast; form and dimensions of archiplast or trichome; degree of development of the envelope; number of archiplasts or trichomes within the envelope; number of partial colonies in the compound colony. Differences in these respects may be considered as graduated variations of a few metabolic processes.—Several species were grown under conditions very unlike the natural environment without change of character; but environmental changes of certain sorts, including variations in the substrate, in the nutrients supplied, and in illumination, were found to produce marked changes, sometimes resulting in the appearance of characters distinguishing entirely different genera. When such cultures were restored to their ordinary environment, however, the original characters of the species reappeared.—Parallels are pointed out between stages in the ontogenetic history of certain species and forms in the taxonomic series to which the species in question belong. The evidence indicates that the external form of the colony is very susceptible to environmental differences. The mode of cell division and the structure of the archiplast and trichome, being less variable are more reliable as taxonomic distinctions. However, a satisfactory classification must rest upon a review of all characters.—The nature of the systematic differences in this group is correlated with asexual reproduction, with the cytological characters of the archiplasts, and probably with the special physiological properties of the protoplasm. The rarity of discontinuous variation may be related to the absence of a sexual process.—Several instances of homoplasmy as between Cyanophyceae and Isokontae are cited.—*C. E. Allen.*

7160. CUNNINGHAM, J. T. **Origin of species and origin of adaptations.** Rept. British Assoc. Adv. Sci. 1922: 399-400. 1923.—This paper was presented before the botanical and zoological sections in a discussion "on the present position of Darwinism." Natural selection is rejected in favor of mutation as the source of species characters. The author believes that modifications of organs originating by mutation may occur by stimuli from hormones and from functional exercise.—*Merritt N. Pope.*

7161. DANIEL, LUCIEN. **L'hérédité chez les plantes greffées.** [The heredity of grafted plants.] Compt. Rend. Acad. Sci. Paris 179: 1198-1199. 1924.—A report is given on the influence of stock in genera grafts. In certain cases, the heredity of certain characters was acquired by graftage. "This heredity can be durable or transitory; the variation can affect all the individuals or only some individuals, but all the individuals are neither affected in the same manner nor in the same degree."—*Richard Wellington.*

7162. EAST, E. M. **Two decades of genetic progress.** Ann. Rept. Smithsonian Inst. 1922: 285-295. 1924.

7163. FLOCK, H. H. **Flock's revised breeder's and cocker's guide; a full and complete treatise on raising game fowl.** 81 p. Illus. Andrew's Printery: Chattanooga, Tennessee, 1924.—This is a guide for the selection, feeding and fitting of game fowl. A short discussion of the treatment of diseases is included.—*Hugh C. McPhee.*

7164. FROST, H. B. **The chromosomes of citrus.** Jour. Washington [D. C.] Acad. Sci. 15: 1-3. Illus. 1924.—Pollen mother cells of 3 varieties of *Citrus*, 1 of *C. maxima* (Burm.) Merrill and 2 of *C. sinensis* Osbeck, stained with iron-acetocarmine, in many counts gave 9 as the reduced chromosome number for these 2 species. These determinations led to the conclusion that 9, not 8 as reported by Strasburger and Osawa, is the usual haploid chromosome number in *Citrus*.—*A. E. Longley.*

7165. HIRATA, K. **Sex reversal in hemp.** (Preliminary report.) Jour. Soc. Agric. and Forest. Sapporo [Japan] 16: (145)-(168). Illus. 1924. [English résumé P. (166)-(167).]—It

is shown that the sex ratio in hemp is not decisively influenced by the color, maturity and weight of the seed or by soil fertility. There is usually a preponderance of females. The haploid chromosome number is 10. In the variety, Tochigi, there is 1 chromosome pair the members of which appear to differ from each other. It is suggested that some hemp plants are pure and their sex cannot be reversed while others are impure and reverse their sex easily. The diploid chromosome mechanism may be represented as $18+X+Y$ for the ♂ and $18+X+X$ for the ♀.—*H. C. McPhee.*

7166. HOVASSE, R. *Théorie chromosomienne et hérédité. (À propos d'un livre récent.)* [The chromosome theory and heredity (apropos of a recent book).] *Bull. Biol. France et Belgique* 58: 473-481. 1924.—This is a definite challenge to the Morgan theory of the continuity of number and structure of chromosomes as supported in recent articles by Eugenot. The arguments against such a theory are: the presence of different chromosome numbers in the somatic tissue of both salamanders and frogs, the variations in chromosome number of developing frog eggs, and the lack of uniform chromosome numbers in frogs and bees produced parthenogenetically. An objection to the linear arrangements of genes in the chromosome is raised due to the fact that the ribbonlike chromosome of the prophase becomes almost spherical at the metaphase. Such facts support the view that chromosome number is controlled by an equilibrium between nucleus and cytoplasm. It is suggested that environmental factors may alter this equilibrium and so alter the chromosome number. Work is being carried on to test the effect of wide changes in temperature on frog and *Drosophyllum* embryos. The work of Kosmensky on *Lymantria dispar* is cited as proof that an increase in chromosome number has been brought about through the action of temperature.—*A. E. Longley.*

7167. ISHIHARA, MAKOTO, RIICHIRO KÔKETSU, AND HOTISHI KOJIMA. *Über die Vererbung der Blütenfarbe einiger Sippen von Papaver somniferum.* [Inheritance of flower color in several varieties of *Papaver somniferum*.] (Japanese.) *Idengaku Zassi* (Japanese Jour. Genetics) 1: 185-193. 1922.—It has been proved (1) that violet color is dominant over white; (2) that the F_2 generation ratio from crosses between violet and white is 9 violet: 3 rose-red: 4 white; and (3) that there are 2 types of rose-red, a dark and a light, of which one is homozygous and the other heterozygous as to color factors. The authors explained these results by the assumption of the *A*-factor, which conditions the rose-red color, and of the *B*-factor which, by its co-existence with *A*, produces violet. The violet zyzotes should be *ABAB*, *ABaB*, *ABAb* or *ABab*, the dark rose-red *AbAb*, the light red *Abab* and the white *aBaB*, *aBab*, or *abab*. Accuracy of this assumption has been established by exact experiments.—*Authors (translated).* (Courtesy Japanese Jour. Bot.)

7168. KAJANUS, B., UND S. O. BERG. *Kreuzungsstudien an Gerste.* [A study of barley crosses.] *Hereditas* 5: 287-296. 1924.—Each of the character pairs, 6-rowed versus 2-rowed and hulled versus naked grain, in barley were found to differ in 1 genetic factor. These 2 character pairs were shown to be independently inherited. Inheritance of grain color in a cross of yellow with dark, violet brown was complex but an explanation was suggested on a 2-factor basis. Factor *A* was suggested as controlling blue color of the aleurone and factor *B*, brown color in the pericarp. With *A* absent the aleurone is colorless and with *B* absent the pericarp is yellow. The presence of both *A* and *B* results in violet-brown color of grain. Since *A* is an aleurone factor, different colored grains may be found on an individual plant either with or without *B*. A comparison of germination of seed from 2-rowed, intermediate, and 6-rowed types showed 73.44, 64.47 and 65.02% germination, respectively. The difference was assumed to be due to poorer germination of seed from the lateral florets.—*Fred Griffee.*

7169. KEMPTON, J. H. *A dominant lethal chlorophyll mutation in maize.* *Jour. Agric. Res.* 29: 307-309. 1924.—A sectorial chimera in which one-half of the plant was yellow, the other green, appeared in the F_1 of a cross between 2 normal strains of maize. When normal green plants were fertilized with pollen from the green half of the chimera they gave only green progeny while equal numbers of yellow and green seedlings resulted when normal green plants were fertilized with pollen from the yellow section of the chimera. The yellow seedlings failed to survive in the field but matured pollen under glass. When normal green plants of *Euchlaena mexicana* were crossed with yellow plants surviving in greenhouse cultures, the F_1

segregated for yellow and green plants in equal numbers. It is concluded that the yellow character represents a dominant mutation lethal under field culture.—*Author*.

7170. KÔKETSU, R. Über die Bastardierung von *Ricinus communis* L. II. Mitteilung. [The hybridization of *Ricinus communis* L. Report II.] Rept. Faculty Med. Imp. Univ. Kyushu. 7: 401-419. 1923.—The inheritance relations of spineyness and smoothness of the fruit capsules of *Ricinus communis* were studied. Heterozygous plants were found to be intermediate in form and consequently the F_2 ratio is 1:2:1.—*Author (translated)*. (Courtesy *Japanese Jour. Bot.*)

7171. KONDÔ, MANTARÔ, AND MAMÔRÛ ONÔ. Über eine Art von Semisterilität beim Reis. [One kind of semisterility in rice.] (Japanese.) Nôgaku Kwaihô [Jour. Sci. Agric. Soc.] 250: 589-598. 2 pl. 1923.—In 1916 a semisterile rice plant suddenly appeared in the scientific experimental plots of the Ôhara Institute, in a pure line of "Sinriki." The authors bred and propagated these plants in pedigree cultures from 1916 to 1922, examining their various characteristics. The type has thick stalks, large grains and loose bearded panicles. By means of annual propagation, the authors have always found that the entire offspring was semi-sterile; no normally fertile plant ever appeared. Semi-sterile rice plants hitherto known are heterozygous, and give 2 classes of offspring, semi-sterile and fertile. But the semi-sterile plants concerned here are homozygous, quite different from the well known semi-sterile rice plant types. The percentage of sterility of the unfertilized flowers of this new type amount to: 1917, 63%; 1918, 61%; 1919, 65%; 1920, 65%; 1921, 75%; and 1922, 81%; so, on the average, 67%. The percentage is thus very high. In the well known semi-sterile rice plant the sterile flowers constitute less than 50%. The authors have also tried to plot the distribution of unfertilized flowers in a panicle.—The next question is, whether the fertilization of the flowers is equally divided from the bottom to the top of the panicles, or whether sterile areas exist anywhere. The authors have found that the unfertilized flowers are always equally distributed in the upper, middle and lower thirds of the panicle and in the primary shoots as in the secondary shoots, that therefore no particular zone of unfertilized flowers exists. But the number of unfertilized flowers is probably somewhat larger in the secondary shoots than in the primary ones. The authors have also investigated the point whether frequency of sterility varies according to stalk length (after the series of stalk diagrams), but in this connection they can establish no differences.—*Authors (translated)*. (Courtesy *Japanese Jour. Bot.*)

7172. KRISTOFFERSON, KARL B. Contributions to the genetics of *Brassica oleracea*. *Hereditas* 5: 297-364. Fig. 1-24. 1924.—Crosses between the horticultural varieties of *Brassica oleracea*; *B. capitata* (cabbage), *B. gemmifera* (Brussels sprouts), *B. acephala* (kale), and *B. botrytis* (broccoli), showed generally an intermediate condition in F_1 with great variability in F_2 . The parental types were not completely recovered. The systematic classification of the cultivated varieties of this species by means of morphological characteristics is evidently identical with a division on the basis of similarities or differences as regards the genotypes of the varieties.—*D. F. Jones*.

7173. LATHOUWERS, V. Étude génétique de deux variations speltôides. [Genetic study of two speltoid variations.] *Bull. Soc. Roy. Bot. Belgique* 57: 79-106. Pl. 4. 1924.—The Triticum speltoids studied result from natural crosses between *T. vulgare* and *T. spelta*; they approach forms obtained by various authors by artificial crossing between Froment and Epeautre. It seems that there ought to be various speltoid forms of a different genetic constitution; the author thinks that the speltoids of Nilsson-Ehle, and of other Scandinavian geneticists are not entirely comparable to those of Leighty and Boshnakian, nor to those which he has studied through several generations at Gembloux.—*E. de Wildeman (translated)*.

7174. MCPHEE, HUGH C. The influence of environment on sex in hemp, *Cannabis sativa* L. *Jour. Agric. Res.* 28: 1067-1080. Pl. 1, fig. 1-3. 1924.—It is shown that the time of flowering of hemp is largely controlled by the relative length of day and night. When hemp is grown in the greenhouse during the winter months many of the individuals show sex reversal but it has been found that varying proportions remain apparently sexually pure under such conditions. No significant sexual changes were induced by growing several plants in an artificially darkened house during the summer months. It is suggested that although the development and expression of sex in hemp are affected by environmental factors, they are not controlled by such factors.—*H. C. McPhee*.

7175. MELANDER, L. W. Common and Japanese barberry hybrids. Minnesota Hort. 53: 81-83. 2 fig. 1925.—Hybrids between *Berberis vulgaris* and *B. Thunbergii* are frequently found in hedges of the latter and such bushes are susceptible to the attacks of *Puccinia graminis*. Such hybrid plants may be recognized by their vigor and coarseness when mature, especially under untrimmed conditions. Recognition of these susceptible hybrid plants is often difficult under nursery conditions. It is suggested that propagation of *B. Thunbergii* should be made by cuttings from plants known to be specifically pure.—L. R. Waldron.

7176. MUNERATI, M. Contribution à l'étude de l'apparition du sexe chez les plantes dioïques. [A contribution to the study of the appearance of sexes in dioecious plants.] Compt. Rend. Acad. Sci. Paris 179: 1200-1202. 1924.—Continuous illumination of hemp prolongs the period of vegetative development to over 8 months from planting. A reduction in the period of daily illumination retards vegetative development and accelerates flower development. Under continuous illumination spinach flowered in 25 days from planting while the check which was grown under the usual diurnal changes in light showed no tendency to flower at 60 days after planting.—H. C. McPhee.

7177. NILSSON-EHLE, T. Un curieux phenomene de mutation. Vie Agric. et Rur. 26: 151. 1925.—In plats of oats, barley and rye a considerable number of seedlings lacking chlorophyll sometimes appear. By experiment it was found that the proportion among 50 seedlings was 2.95 green to 1 white. Often the rye seedlings instead of being pure white contain some red pigment which appears to be inherited independently of the chlorophyll-less character. The phenomenon has not been observed in wheat.—H. C. McPhee.

7178. PEARSON, HELEN R. Origin of some of our leading varieties of peaches. Amer. Fruit Grow. Mag. 45³: 39. 1925.—A brief history is given of the origin of a few peach varieties.—Richard Wellington.

7179. RENNER, O. Die Botanik vor Mendels Auferstehung. [Botany before the emergence of Mendelism.] Naturwissenschaften 12: 752-757. 1924.—During the 10 years preceding the inception of Mendelism, Darwin's theories still exerted a dominating influence upon botanical investigations while the question of inheritance of acquired characters is still of interest. Certain breeding results secured by Nilsson and von Rümker in the '90's cast suspicion upon certain current beliefs and Galton, Pearson, and Bateson attacked the problem from the biometrical standpoint, but the real leader of this pre-1900 botanical work was deVries. Correns' work pertinent to heredity started with his xenia investigations which led eventually to his discovery of the laws of inheritance secured from his work with peas.—L. R. Waldron.

7180. RIDDLE, OSCAR, AND HANNAH E. HONEYWELL. Blood calcium in relation to sex in pigeons. Proc. Soc. Exp. Biol. and Med. 22: 222-225. 1925.—From a preliminary study made on mated pairs of adult pigeons, larger amounts of calcium were found in the serum of females. The fact that determinations made at 10-day intervals often completely fail to check suggests, however, that the calcium level of the blood varies in the different stages or phases of the reproductive cycle. The observed differences are therefore possibly, in part at least, referable to reproduction rather than to sex. From a small special group of unmated mature male hybrids—some of which were probably zygotic females—calcium values apparently intermediate to those of males and females were obtained.—Oscar Riddle.

7181. ROULE, LOUIS. Un cas probable de mutation chez les poissons. [A probable case of mutation in fishes.] Compt. Rend. Soc. Biol. 89: 1027-1028. 1923.—Deep sea fishes of the genus *Beryx* having unusually long rays in the pelvic fin were found on sale in the fish markets. They may have arisen as mutations from *Beryx decadactylus* C. V.—Lloyd Ackerman.

7182. SCHAFER, E. G. Inheritance studies. Washington [State] Agric. Exp. Sta. Bull. 180: 31. 1923.—These are studies on cereals. Turkey \times Jenkin wheat crosses show winter hardiness to be recessive. Many promising immune strains have been isolated from various crosses involved in studies of the inheritance of resistance to smut in oats and wheat. Selected susceptible F_3 plants continued the susceptible characteristic in F_4 . Resistant F_3 plants produced resistant F_4 rows. The smut, *Tilletia tritici*, after passing one generation on rye, affected wheat without any apparent loss of vigor. The lemma of common oats afforded marked protection to the attacks of covered smut. When removed, the infection practically

doubled. One hundred F_2 rows of rye \times wheat all resembled rye, though showing unmistakably their hybrid origin. Forty-two of these rows were smutted, 1 row giving 10% of smutted heads. F_1 plants of Bluestem wheat \times *Aegilops cylindrica* and Marquis \times *A. cylindrica* were absolutely sterile. Studies on inheritance in oats (Red Rustproof \times Abundance) gave an F_3 family of 345 rows, with types both earlier and later than either parent; 83% of the rows were immune to covered smut like Red Rustproof, and only 1% as susceptible as Abundance; red color of glumes and lemmas was dominant, 2 factors for lemma color and 1 for outer glume color being involved. Basal hairs were dominant. Beard on the secondary oat involves multiple factors, probably 3.—*Orland E. White.*

7183. STOUT, A. B. **Self-incompatibility in wild species of apples.** Jour. New York Bot. Gard. 26: 25-31. *Illus.* 1925.—Fourteen species of apple were tested by bagging to determine their self-fruitfulness. Eight of the species were found to be completely self-incompatible, 3 self-compatible and 3 feebly self-compatible. As the germination of pollen of one species, *Malus coronaria*, was about 10%, and of the other species from 75 to 90%, failure of fruiting was ascribed to incompatibility, particularly since the uncovered flower-clusters set fruit freely.—*Richard Wellington.*

7184. THADANI, K. I. **Inheritance of certain characters in Gossypium.** Agric. Jour. India 20: 37-42. 3 pl. 1925.—Seed fuzziness, quantity of fiber on seed and length of fiber are considered. Naked seed (entire absence of fuzz on seed coat) as found in the "No Lint" type of Upland cotton, proved completely dominant in crosses with fuzzy-seeded Upland varieties, and the F_2 segregation was 3:1. In crosses of partially fuzzy with completely fuzzy forms, the latter condition was dominant except in 1 case. When the Yuma variety of Egyptian cotton, having most of the seed coat naked, was crossed with an Upland variety having completely fuzzy seed (an interspecific cross) the nearly naked condition was dominant in F_1 and an irregular segregation into 5 classes occurred in F_2 .—In crosses between a form of Upland cotton having little or no fiber on the seed with Upland varieties having abundant fiber, the "lintless" condition behaved as a simple recessive.—Long fiber was dominant over short fiber in crosses of Sea Island, Egyptian and long-staple Upland varieties with short-staple Uplands, but no definite segregation was observed in F_2 .—*T. H. Kearney.*

7185. TRAJKOVICH, H. **Inheritance of Xantha seedlings in maize.** New York Agric. Exp. Sta. [Cornell] Mem. 82. 1-13. 1924.—A new yellow seedling disorder comparable to virescent white is described and designated xantha (*Xn xn*). The character is recessive to normal green and plants homozygous for it mature under favorable conditions. The evidence indicates that xantha seedlings are dependent upon duplicate genes, though more data are necessary to establish this fact definitely. One of the genes for xantha seedling is not closely linked with either virescent seedling or endosperm color.—A study of plastid size shows that a positive correlation exists between the size of these bodies and the amount of chlorophyll in the several types of seedling chlorophyll deficiencies.—*J. H. Kempton.*

7186. TURNER, C. L. **A mutation in the moth-like fly (*Psychoda alternata*) and the method of its transmission.** Biol. Bull. 48: 128-138. 2 pl. 1925.—The author has successfully reared 2 species (*P. alternata* and *P. minuta*) in the laboratory. The former has proved excellent for genetic studies. Malpighian tubules of larvae, pupae, and adults are typically reddish-brown in color. The ocelli of larvae, which degenerate at pupation, and compound eyes of pupae and adults are of similar color. Normal adults are positively phototropic and negatively geotropic when they first emerge, but are less sensitive to light and gravity when older. Ocelli, tubules, and compound eyes of the mutant are always devoid of color. Reaction to gravity is identical with normal. Light has no directive effect on mutants although possessing kinetic effect on both normal and mutant flies. Results from breeding very large numbers indicate that mutant condition is recessive to normal, and is inherited independently of sex.—*Anna R. Whiting.*

7187. VALLEAU, W. D. **Overcoming root rot by breeding.** Science 53: 345. 1921.—The author notes a variation in the degree of resistance of corn plants to "root rot" and states that "preliminary experiments indicate that field selection of seed from the longest-lived plants may prove a means of obtaining seed of a high degree of resistance."—*Richard Wellington.*

7188. WELLINGTON, RICHARD. **An experiment in breeding apples. II.** New York Agric. Exp. Sta. [Geneva] Tech. Bull. 106. 1-149. 1924.—A report is made on the segregation of tree and fruit characters in 1832 F_1 generation selfs, 57 F_2 seedlings from 4 crosses between F_1 plants, and 1 F_1 from a possible selfed variety. The performance of each cross and variety is discussed and the probable gametic composition of the varieties is noted. The data are thus largely a presentation of results obtained in the F_1 generation derived from heterozygous material.—*Richard Wellington.*

7189. WELLINGTON, RICHARD. **Apple varieties which have made the best parents.** Proc. Amer. Soc. Hort. Sci. 1921: 28-29. 1921.—A brief report is given of the number of desirable and undesirable seedlings obtained from 31 F_1 generation apple crosses and attention is called to those varieties which have given a high percentage of noteworthy progeny.—*Author.*

7190. WELLINGTON, RICHARD, R. G. HATTON, AND J. AMOS. **The "running off" of black currants.** Jour. Pomol. 2: 160-198. 4 pl., 7 fig. 1921.—The "running off" or dropping of berries in the black currant occurs even though all varieties tested were self-fruitful. Some flowers were found to be self-pollinated while others were dependent upon insects. The latter type, largely situated at the apical end of the flower cluster, possessed a style which extended beyond the anthers. Only 1 variety, Baldwin, was found to be a consistent good cropper.—*Richard Wellington.*

7191. WHITING, P. W. **Parasitic wasps as material for genetic research.** St. Stephen's Coll. Bull. 62: 21-24. May, 1921.—*Hadrobracon*, a wasp parasitic on meal worms, is small, easily handled, has a generation of only 10 days at 30°C., and possesses variations subject to genetic analysis. An orange-eyed ♂ appeared as a mutant from the black-eyed type. Orange bred as recessive, the males inheriting from the mother only, except in few cases where they developed from fertilized eggs as demonstrated by paternal eye-color. They are probably, under such conditions, mosaic and haploid.—*Anna R. Whiting.*

7192. WHITING, P. W. **Studies on the parasitic wasp, *Hadrobracon brevicornis* (Wesmael).** Biol. Bull. [Woods Hole] 41: 153-155. 1921.—Up to the present time linkage has not been demonstrated in Hymenoptera. In species producing males by haploid parthenogenesis we would expect partial linkage in oogenesis, complete linkage in spermatogenesis. In the parasitic wasp, *Hadrobracon*, orange eye color is inherited as a sex-linkoid recessive to typical black. Heterozygous females produce black and orange males in equal numbers. A heterozygous ♀ produced adult progeny that were almost all orange, and a number of small-sized black-eyed pupae without cocoons, most of which failed to eclose. The total ♂ progeny from her and her lethal-bearing descendants, 2 daughters and 2 granddaughters, is black, 28 adults, 111 pupae; orange, 132 adults, 31 pupae; 59 crossovers to 243 straights, or 19.5% crossovers. Partial linkage is therefore demonstrated in Hymenoptera. No abnormal growth or defect in any organs was apparent. (See also Bot. Absts. 11, Entry 365.)—*Anna R. Whiting.*

7193. WILDER, INEZ W., AND E. B. PEABODY. **Hermaphroditism in *Eurycea bislineata*.** Biol. Bull. [Woods Hole] 47: 345-367. 8 fig. 1924.—Any individual which possesses both ♂ and ♀ sex cells, even though they appear in the same gonad, is regarded as a true hermaphrodite. Of the 1113 *Urodeles* (*Eurycea bislineata*) that were examined, 15 or 1.35% were hermaphroditic, the hermaphrodites occurring in approximately constant proportions in every developmental stage from larva to adult. (See also Bot. Absts. 13, Entry 3539.)—*Lloyd Ackerman.*

7194. WILLIAMS, J. O. **Developing an American utility horse.** U. S. Dept. Agric. Dept. Circ. 153. 22 p. 18 fig. 1921.—This circular is a progress report of breeding work carried on at the U. S. A. Wyoming Horse Breeding Sta., Buffalo, Wyoming, for the purpose of establishing a utility light horse. The work was begun in 1904 at the Colorado Exp. Sta. and in 1919 transferred to Wyoming. The breeds used in the experiment are Standard-bred as the main foundation with a more sparing use of the Morgan and the American Saddle Horse. By judicious blending of these breeds and strict selection considerable progress has been made in the establishment of a type of large, useful horse. The qualities sought in the type of horse which is being developed in this work are a combination of size, substance, soundness, endurance, good temperament, well balanced action, and speed at the walk and trot.—*W. S. Anderson.*

7195. WILSON, EDMUND B. The sex-chromosomes of sea-urchins. *Science* 61: 184. 1925.—The author makes certain corrections of page 758 of the new (3rd) edition of his book "The cell in development and heredity." *Toxopneustes* has a V-shaped sex-chromosome instead of J-shaped. The segmenting eggs of the sea-urchins mentioned contain either 1 sex-chromosome or none, and not 1 or 2 as stated. (See Bot. Absts. 14, Entry 4369.)—Lloyd Ackerman.

7196. WINGE, ÖJVIND. Zytologische Untersuchungen über Speltoide und andere Mutanten-Ähnliche Aberranten beim Weizen. [Cytological studies on speltoid and similar mutant types of wheat.] *Hereditas* 5: 241-286. Fig. 1-30. 1924.—This study was undertaken in order to observe any cytological irregularities which might account for the complicated ratios obtained by Nilsson-Ehle, Vestergaard, Åkerman, Linhard, and Kajanus in inheritance studies of Speltoid heterozygotes and similar mutant types. Lagging chromosomes as well as trivalents and tetravalents were frequently observed in the heterozygous mutants. To explain this behavior and to correlate it with the morphological characters of the mutant plant the author outlines a theory which begins with the conception of the chromosome complement of normal varieties of *Triticum vulgare* as consisting of 7 groups of 6 more or less homologous chromosomes, each group of 6 having arisen through 2 reduplications of a single pair of the original ancestor. In a particular group of 6 any one of which may be represented as $(2A + 2B + 2C)$ or $\frac{ABC}{ABC}$ the factors are supposedly located which influence the mutant character.

In a normal plant, if chromosome pairing occurs between non-homologous chromosomes, some gametes will result which possess a chromosome complement other than ABC . Gametes such as ABB combining with normal gametes give individuals of the constitution $\frac{ABB}{ABC}$.

The B chromosome is considered as carrying a spike lengthening factor and an awning factor. The C chromosome carries a spike lengthening factor and an awn inhibiting factor. The Speltoid heterozygote which has a long spike and is always heterozygous for awning may therefore be represented as $\frac{ABB}{ACC}$. The Speltoid homozygote possessing a still longer

bearded spike may be represented as $\frac{ABB}{ABB}$. In this type, large wing-shaped chromosomes were observed which were regarded as tetravalents formed by the 4 B chromosomes. The compact-heterozygote has the constitution $\frac{ACC}{ABC}$ and a similar type with a still shorter spike probably does not possess a B chromosome. The Squarehead heterozygote which is heterozygous for both the spike lengthening and the awn inhibiting factor is represented as $\frac{AB(BC)}{AOC}$

since it was found to possess only 41 chromosomes. The (BC) chromosome has arisen through crossing over between B and C of the spike lengthening and awn inhibiting factors. A dwarf type was found to be fairly regular in chromosome behavior while a perennial type was found to possess only 41 chromosomes.—C. H. Goulden.

7197. WINTER, F. L. The effectiveness of seed corn selection based on ear characters. *Jour. Amer. Soc. Agron.* 17: 113-118. 1925.—Seven hundred ears of Illinois Non-Pedigree corn were classified on the following characteristics of the ears; luster of grain, horny endosperm, indentation, color of shank attachment, depth, shape and plumpness of seed, size of germs, and weight of ear. The ears were placed in 4 categories on the basis of the above named characters: 1st choice, 2nd choice, medium and poorest. Ten seed from each ear were then tested on the limestone germinator. The number of strong, weak and dead kernels per ear was recorded and the presence of *Fusarium*, *Diplodia* and *Scutellum* rot noted. The results of the germination test do not indicate a significant difference between classes in every case but if the 1st 2 classes are combined and compared with the last 2 classes a significant difference is obtained in favor of the selected ear in every case with the exception of the *Scutellum* rot where the difference, though in the right direction, was not significant. The author concludes from these data that ear selection is an important step in obtaining good seed corn.—J. H. Kempton.

HORTICULTURE

F. C. BRADFORD, *Editor*

(See also in this issue Entries 6825, 6904, 6922, 6926, 6928, 6929, 6932, 6979, 7038, 7043, 7046, 7049, 7069, 7120, 7154, 7161, 7164, 7183, 7188, 7190, 7379, 7472, 7503, 7512)

7198. ANONYMOUS. **China tea.** *China Jour. Sci. and Arts* 2: 105-108. 5 pl. 1924.—Chinese tea has been almost entirely superseded on the market by that from India and Ceylon. Before 1878, Foochow was the principal port of export for Chinese tea; after this the farmers in that district began adulterating their product and the trade has shifted until Hankow is now the chief exporting center. About this same time tea from India and Ceylon came on the market and proved less expensive. Now India, Ceylon, Java, and Sumatra export 10 times the amount shipped from China. All efforts to revive the industry on a large scale in China have failed but there are hopes of a better day when law and order may prevail.—*Albert N. Steward.*

7199. ANONYMOUS. **Spring cabbages.** Tests of a number of varieties. *Jour. Dept. Lands and Agric. [Ireland]* 24: 248-251. 1924.—Some varieties produced no heads, though recommended by commercial interests.—*Donald Folsom.*

7200. ANONYMOUS. **The banana and its cultivation,** with special reference to the British Empire. *Bull. Imp. Inst.* 22: 303-333. 1924.—The banana takes a leading place among tropical fruits, both for local value and for shipping importance. Two species are industrially prominent, *Musa sapientium* and *M. cavendishii*. Soil requirements, propagation, culture, pruning, harvesting, packing, shipping, diseases, insect pests and subsidiary products are discussed in detail. The present status of banana cultivation in the various countries of the empire is summarized.—*L. A. Kenoyer.*

7201. ANONYMOUS. **The tree fruit crop, 1924.** *Jour. Dept. Lands and Agric. [Ireland]* 24: 279-281. 1924.—A cold, wet, sunless season reduced the yield and quality, checked insect pests, and favored apple and pear scab, especially, among the various diseases.—*Donald Folsom.*

7202. ANONYMOUS. [Rev. of: COCKAYNE, L. **The cultivation of New Zealand plants.** (New Zealand practical handbooks) 139 p. 21 pl. Whitcombe and Tombs; Auckland, Christchurch, Dunedin, Wellington, Melbourne and London, no date (see *Bot. Absts.* 13, Entry 7096).] *Nature* 115: 44-45. 1925.

7203. ANONYMOUS. [Rev. of: WARD, F. KINGDON. **The romance of plant hunting.** xi + 275 p. 8 pl. E. Arnold & Co.; London, 1924 (see *Bot. Absts.* 13, Entry 7537).] *Nature* 115: 10-11. 1925.

7204. ANONYMOUS. [Rev. of: WILLMOTT, ELLEN. **Warley garden in spring and summer.** 2d. ed. ii p. 41 pl. Wheldon and Wesley; London, 1924.] *Nature* 115: 12. 1924.

7205. AFONSO, PEDRO CORREIA. (0) coqueiro: produção—indústrias—comércio. . . . [The coconut tree: its production, industries and commerce.] 174 p. *Illus.* Imprensa nacional: Nova Goa, 1924.—This article reports, for Portuguese India and Ceylon, the present production, industrial uses, and marketing of the coconut and products derived from it. Pulverized coconut, copra, coconut oil and the residue of oil used for food and soaps, also coconut fiber, are considered in their relation to manufacturing processes and machinery, to costs and to the technical organization of the industry. The culture of the coconut in the territory of Goa is discussed. Its marketing in the (British) Indian Empire, Europe, and the U.S.A. is especially discussed. The author concludes that coconuts should not be exported whole in the shell, but converted, locally, into manufactured products for export. Price and production statistics are given. Soil erosion, drainage, and dry farming in relation to coconut groves are discussed. A bibliography is appended.—*Marie Kiersted Pidgeon.*

7206. BECKEL. **Sortenanbauversuche mit Tomaten im Jahre 1924.** [Variety trials with tomatoes in 1924.] *Mitteil. Deutsch. Landw. Ges.* 40: 161-164. 1925.—This article reports trials with 5 varieties of tomatoes at 6 stations.—*A. J. Pieters.*

7207. BROWN, W. H. **The cherry in New South Wales.** A discussion of some of the problems. *Agric. Gaz. New South Wales* 36: 121-134, 199-208. 5 fig. 1925.—The acreage in cherries

in N. S. W. approximates 2400. For successful cultivation fertile soil, reliable rainfall, and moderate temperature are necessary. As seed germination is very difficult, recourse is had mainly to suckers for root stock material which is limited almost entirely to the 2 kinds, Kentish and Mazzard. The former, which is more popular, is characterized by a more limited root development and is better suited to heavier soils. The Mazzard, planted on moderate to heavy soils, comes into bearing much later than the Kentish. A list of varieties is given adapted to the 2 root stocks used. Suggestions are made relative to methods of planting to obviate self-sterility, which is often of economic importance. Other topics discussed relate to the care of the young orchard, pruning, picking, packing, and marketing, and certain disease and insect pests. The varieties, Early Lyons, Florence, and St. Margaret are considered outstanding.—*L. R. Waldron.*

7208. BUTCHER, F. H. **Fruit growing on the Nilgiris.** Jour. Madras Agric. Students Union 12: 242-249. 1924.—Cultivation of exotic fruit trees has been practised in the Nilgiris, South India, for about 100 years with varying success. The climate has its drawbacks and there is no distinct cold season for the resting of the fruit-bearing branches.—Brief hints are given on the methods of propagation and the care to be taken in the growing of the apple, plum, pear, peach and quince, special varieties of which are recommended.—*P. S. Jivanna Rao.*

7209. CHEEMA, G. S., AND S. R. GANDHI. **The influence of notching on the yield of the fig trees.** Agric. Jour. India 18: 501-504. 1 fig. 1923.—The cultivation of figs in the Bombay Presidency is limited by the poor keeping-quality of the fruit and the low yield of the crop. It has been found that notching the stem above a bud increases the yield by stimulating the growth of lateral branches. The development of these laterals diminishes damage by wind and birds. To be effective the notch must be deep and wide.—*A. Howard.*

7210. CHEEMA, G. S., AND S. R. GANDHI. **The sun-dried Poona fig.** Agric. Jour. India 19: 280-283. 1924.—The fresh fig industry of Poona cannot be extended owing to the poor carrying quality of the fruit. Drying the produce is advocated and the best method of doing this is described.—*A. Howard.*

7211. DESHMUKH, G. B. **Self-sterility in grapes.** Agric. Jour. India 19: 613-616. 1924.—At Nasik, the center of the Bombay Deccan grape trade, 2 high quality varieties, Phakadi and Pandharisahebi, are very poor yielders, while the poor quality Bhokari yields well. Grafting these high quality varieties on Bhokari stock and overhead training were only partial remedies. Hand pollinating the shy yielders with pollen from a self-fertile variety proved that the cause of the low yield was self-sterility. Examination of the flowers showed that the stamens were too short to reach the stigma and that the mechanism of opening rendered self-pollination impossible.—*A. Howard.*

7212. FERRIS, E. B., AND F. B. RICHARDSON. **The Satsuma orange in South Mississippi.** Mississippi Agric. Exp. Sta. Bull. 217. 1-28. Fig. 5. 1923.—This article presents a history of the development of the Satsuma industry in southern Mississippi, with recommendations as to varieties, culture, fertilizers, and spray materials. The Owari and Ikeda are grown almost exclusively but the Wase appears promising. Clean cultivation with winter cover crops is advised. A 6-4-4 fertilizer is recommended for young trees and an 8-4-6 for bearing trees. Spray mixtures and schedules are given in detail.—*J. F. O'Kelly.*

7213. FINCKENSTEIN, FINCK VON. **Ueber die Nachreife schwer reifender Gehölzsamen. (Einiges ueber Stecklingen.)** [After-ripening of seed difficult to ripen. (Notes on cuttings.)] Mitteil. Deutsch. Dendrol. Ges. 33: 175-176. 1923.—The author was able to propagate the following species from cuttings: *Cercidiphyllum japonicum*, *Hamamelis virginica*, *Catalpa speciosa*, *Castanea vesca*, *Pinus cembra*, *Abies pinsapo*, *Sciadopitys verticillata*, *Sequoia gigantea* and *Ginkgo biloba*. They usually do not root within a year, with the exception of *Catalpa speciosa*, which after 2 months forms long roots. Pods which can not fully ripen in the autumn on account of climatic conditions can be brought to ripeness when the twig is surrounded with parchment. Such seed ripen in January and seedlings were obtained in March.—*J. C. Th. Uphof.*

7214. GLOGAU, ARTHUR. **Ueber die Winerharte immergrüner Gehölze und ihre verwendungsmöglichkeit in Park und Garten.** [Hardy evergreens and their use in park and garden.]

Mitteil. Deutsch. Dendrol. Ges. 34: 255-263. 2 pl. 1924.—*Prunus laurocerassus* was introduced long ago; its hardiness has often been questioned. The varieties *P. laurocerasus schipkaensis* and especially *P. laurocerasus schipkaensis* Zabelii are more resistant to cold. The writer observed that evergreens subject to the morning sun suffer more from cold than plants growing in the shade or on the north side of a building. Examples are given of the introduction of the hardy *Rhododendrons* by Seidels. A number of other evergreens are described as to their resistance to cold.—*J. C. Th. Uphof*.

7215. GOEZE, E. Chinas Bäume und Sträucher bezüglich ihrer wirtschaftliche Bedeutung. [Trees and shrubs from China in relation to their economic importance.] Mitteil. Deutsch. Dendrol. Ges. 33: 43-51. 1923.—A large number of species of woody plants are mentioned which are of some use in China. *Vitis amurensis*, *V. Labrusca*, *V. Romanetii* and *Spinovitis Davidii* have sweet, often large, berries; they are, however, not used for wine-making, as rice wine is preferred. On the markets of Shanghai peaches are sold having a weight of 11 ounces. Plums are derived from *Prunus humulis* and *P. tomentosa*, growing wild near Peking. *Ficus toka* from Yunnan produces large and sweet fruits. *Nicotiana tabacum* var. *fruticans* produces a highly esteemed Chinese tobacco; it is much grown near Peking and in the province of Shansi. From *Rhus chlorophora* and *R. utilis* lacquer is produced. A yellow dye is derived from *Sophora japonica* and *Euodia glauca*, and a black dye from the fruits of *Pterocarya strobilacea*. Oils are made from *Eucommia ulmoides*, *Gymnocladus sinensis*, *Elaeococca verrucosa*, *Aleurites cordata*, and *Stillingia setifera*. *Dipelta floribunda* produces edible berries.—*J. C. Th. Uphof*.

7216. GOLZE, E. Europäische Tee. [European tea.] Mitteil. Deutsch. Dendrol. Ges. 33: 41-43. 1923.—No important efforts have been made in Europe to raise tea. According to Link and von Hoffmannsegg, northern Portugal seems to be well suited to the cultivation of this species. The author describes tea growing in the Azores and the occurrence of this plant in other countries.—*J. C. Th. Uphof*.

7217. HARRIS, T. J. The Cavendish banana in Florida. *Citrus Indust.* 6³: 14. 1925.—The suitability of the Cavendish banana (*Musa Cavendishii*) as an additional horticultural crop for subtropical Florida is discussed with special reference to the Taylor-Alexander plantations in Peace Valley. A number of plants in the Seitamineae that yield valuable starches and spices of commerce are enumerated.—*Arthur S. Rhoads*.

7218. HEPPNER, M. J. Recent rootstock developments. *Amer. Fruit Grower* 45³: 10, 50. 1925.—Supplementing an article in the March, 1924, issue of this periodical in which the trend of demand of the various rootstocks used for the different deciduous fruits by California nurserymen for the years 1919-1922 was analyzed, the writer analyzes the development for 1923. But little change has occurred in the percentage demand in cherry stocks, although the Morello root is coming into favor for the sweet cherry. For the almond, there was a greater demand for the almond root in 1922; in 1923 there was a greater demand for the peach as a stock. For the apricot, the apricot and Myrobalan roots have been losing in favor each year while the peach root has been gaining. Two distinct changes have occurred in the demand for plum rootstocks: (1) the demand for the plum on Myrobalan root has been gradually decreasing, and (2) the demand for the plum on the peach root has been increasing, especially during 1923. Somewhat similar changes have occurred with the prune stocks. Little change has occurred in the demand for the peach stocks, peach on peach still seeming to be the best combination. Among pear stocks the Japanese pear has lost considerably, while the French has overtaken the Japanese. This change is traceable directly to pear blight.—*Arthur S. Rhoads*.

7219. HERMS, O. W. The growing of Amaryllis. *Florida Fruits & Flowers* 2²: 39, 47. 1925.—This is a general account of the author's experience in the growing of Amaryllis in Florida.—*Arthur S. Rhoads*.

7220. HESSE, HERM. A. Neue und seltene Gehölze. [New and rare woody plants.] Mitteil. Deutsch. Dendrol. Ges. 34: 340-344. 4 pl., 1 fig. 1924.—*Berberis Wilsonae* Hemsl. from western China is a low and compact shrub. The thorns are deep red when young. Flowers appear in July and August. The foliage is carmine-red in autumn. This species breeds true from seed. *Cotoneaster applanata* Veitch from middle China is a strong grower

and develops beautiful foliage, dark green above and gray underneath. The scarlet red, shiny fruits remain long on the plant. In East Friesland it is hardier than *C. Simmondsii*. *Decaisnea Fargesii* Franch., from western China, is a quick growing shrub, making yearly shoots 2 m. long. It has the appearance of a Juglans. *Populus Wilsonii* Scheider is a broad, pyramidal tree and is recommended for parks. *Spiraea Bumalda crispa* Hesse originated from *S. pumila* Anthony Waterer; it forms large, deeply serrate leaves. It is a 1923 novelty from Hesse.—*J. C. Th. Uphof*.

7221. HODGSON, R. W. Fertilizing citrus trees in California. California Agric. Exp. Sta. Circ. 283. 1-21. 1925.—In California, citrus trees require fertilization if crop production is to be maintained. Nitrogen and organic matter are the only improvers of yield and health of citrus trees. No benefits have been shown from applications of P or K; the ordinary application of N per tree per year is 2 or 3 pounds. Part of the N should be supplied from bulky organic sources and part in concentrated form. Choice of N fertilizers largely determines the time of fertilizer application; bulky forms should be applied in the fall and the concentrated forms in the spring. Winter cover-crops have a replacement value of 3-5 tons of manure. Soil amendments or peat have not shown benefits. As a fertilizer programme for the citrus orchard it is suggested that: (1) cover-crops for the first 7 years suffice; (2) young, bearing trees should have a winter cover-crop and 2 pounds of N (bulky organic form) per tree per year until 12-15 years old; (3) thereafter, use 2-3 pounds of N per tree, $\frac{1}{2}$ from bulky organic sources and $\frac{1}{2}$ from concentrates; (4) soil amendments such as lime should be used only where trials show definite improvement in tree vigor or yield.—*A. R. C. Haas*.

7222. IMPERIAL INSTITUTE, DIRECTOR. Coffee from Sierra Leone. Bull. Imp. Inst. 22: 292-294. 1924.—Tests of samples of coffee grown in the mountainous district of Sierra Leone indicate that though it is of comparatively low quality it would be readily salable and should prove remunerative if cultivated in quantity.—*L. A. Kenoyer*.

7223. JONES, H. A., AND W. W. ROBBINS. Growing and handling asparagus crowns. California Agric. Exp. Sta. Bull. 381. 3-34. 1924.—Careful selection and grading of asparagus seed is recommended. The seed are soaked at 86-95°F. for 4-5 days; soaking at the ordinary temperatures of the air has very little value. They are planted immediately when freed from water on a canvas, February or March being the usual planting time. The Palmetto and Mary Washington varieties are giving the most satisfactory results for fresh or canned asparagus.—*A. R. C. Haas*.

7224. KACHE, PAUL. Zur Sichtung unserer Geholz-Sortimente. [Sifting our assortments of woody plants.] Mitteil. Deutsch. Dendrol. Ges. 33: 198-205. 1923.—The author states that nurserymen grow too many different forms of trees and shrubs which are of little or no use on account of their close resemblance to one another. Many examples are given. At least some of the surplus should be eliminated.—*J. C. Th. Uphof*.

7225. LEICK, ERICH. Die Kaprifikation und ihre Deutung im Wandel der Zeiten. [Caprifigation and its significance in the passage of time.] Mitteil. Deutsch. Dendrol. Ges. 34: 263-283. 1924.—The author discusses the history of our knowledge of caprifigation of the fig. He starts with the statements of early writers like Herodotus, Aristotle, Theophrastus, Pliny and others. Observations and views from the middle ages to the discoveries of modern times are given. Extensive literature citations are appended.—*J. C. Th. Uphof*.

7226. MARTIN, HERMANN. Einiges ueber Paulownia tomentosa. Mitteil. Deutsch. Dendrol. Ges. 34: 294-295. 1 pl. 1924.—*Paulownia tomentosa* is a very rapid growing tree but is not hardy in most parts of Germany. It has flowered once in the rough climate of East Prussia.—*J. C. Th. Uphof*.

7227. NESSELRODE, VON. Araucaria und Platanus rauchbeständig. [Araucaria and Platanus resistant against smoke.] Mitteil. Deutsch. Dendrol. Ges. 34: 377. 1924.—*Araucaria imbricata* is the only known species among the conifers which is resistant to smoke. Among the deciduous trees *Platanus* is the best.—*J. C. Th. Uphof*.

7228. PEARSON, HELEN R. Origin of some of our leading varieties of peaches. Amer. Fruit Grower 45: 39. 1925.—A brief account is given of the origin of a number of varieties of peaches native to Georgia.—*Arthur S. Rhoads*.

7229. RAMACHANDRAN, S. A study of the mango in relation to the mango hopper. Jour.

Madras Agric. Students Union 12: 258-267. 1924.—From 514 to 4,610 flowers were counted in mango inflorescences; the percentage of hermaphrodite flowers varied from 0.21 to 37.58 according to variety. Pollination is mostly by wind.—The frequent failure of the mango crop is due only partly to the mango hopper (*Idiocerus niveosparus*). Factors contributing to premature shedding of fruits are discussed.—*P. S. Jivanna Rao*.

7230. RAVAZ, L., G. VÉRGE, H. LAGATU, ET L. MAUME. *Influence de la potasse sur la santé de la vigne et sur la qualité des vins.* [Influence of potash on the health of the vine and on the quality of the wine.] 31 p. 2 col. pl. Coulet et Fils: Montpellier, 1923.—Differences in the composition of wine may be due to various causes, but largely to variations in cultural practice. Certain soil elements modify these differences. As a result of cultural and fertilizing experiments the authors reach the following conclusions: (1) As a result of applications of "sylvinite" suppression of "rougeau," which is a habitual sign of growth decline, and increase in production without injury to the quality of the wine, were obtained. (2) Without further application of potash but with sufficient autumn and winter rains followed by a dry spring and summer, the same vineyard again showed very marked suppression of rougeau together with 39% increased growth, 110% increase in crop and 12-13% better quality of the product. (3) These advantageous results, including a better quality of the naturally mediocre wine, coincided with an increased content of potash in all parts of the vine and more particularly in the fruit. (4) Sulphate or chloride of potash did not under the same conditions give as good results as sylvinite. (5) Under the experimental conditions, the threshold of toxicity was not approached with sylvinite at 22%, in applications of 500 gm. of sylvinite per plant or 2200 kgm. per ha. (6) The potash content of the wine was also increased; but its chlorine content was not appreciably increased by fertilization with chlorides.—Physiological questions involved are discussed under the following headings: (1) Defective functioning of the roots; (2) change in physiological relations; (3) reciprocal antagonistic action of lime and potash; (4) the absolute quantity of all mineral nutrients in the shoots may be increased by the simple addition of potash; (5) the facts observed confirm the law of minima; (6) the amount determining the increased production has changed the bad state of equilibrium existing before; (7) Is an injurious action to be feared from heavy potassic fertilizing?—*Frederick V. Rand*.

7231. ROBERTS, R. H. *Pollination and the dropping of apples.* Amer. Fruit Grower 45³: 8, 45. *Illus.* 1925.—Though it is conceded that pollination is necessary as one of the steps in fruit setting, pollination does not in itself insure fruit setting. One of the most constant items of apple tree performance is the inverse relation of the number of blossoms to the percentage set. With the average fruiting tree, the best set of fruit is in the top; moreover, the terminal blossoms set better than those borne from weaker spurs and the lateral buds. In addition to pollination a strong vegetative growth is essential for a good set of fruit in many varieties. Early spring applications of readily available nitrogenous fertilizers greatly increase the set of fruit on some varieties. With those which may have early drops, as Wine-sap or McIntosh, even this treatment seems too late to have much effect and steps to increase the amount of reserve food materials in the tree are suggested. Pruning of a type to remove the weaker, less vegetative wood and thus reduce the number of the vegetative growths has given striking results with McIntosh, the aim and result being to secure a tree which has only the type of growth which sets fruit well, as illustrated by the tree tops and stronger upper growth and terminals.—*Arthur S. Rhoads*.

7232. SAX, KARL. *Fertilization of apple orchards in Maine.* Maine Agric. Exp. Sta. Bull. 322. 1-8. *Fig. 1.* 1925.—Annual applications of a complete 5-8-7 fertilizer to mature Ben Davis trees under cultivation, at the rate of 7 and 14 pounds per tree, over a period of 5 years, did not increase the yield. Two annual applications of nitrate of soda to such trees in sod, at the rate of 6 and 12 pounds per tree, more than doubled the yield. Similar effects were observed on trunk circumference and twig growth. Favorable results are thought to be due to a balance between the nitrogen and carbohydrates in the tree.—*Donald Folsom*.

7233. SCHOTTE, G. [Rev. of: PIEHL, OLLE. *Trädgårdens anläggning vid det egna hemmet.* (Laying out home gardens.) 98 p. 41 *Illus.* Hugo Gebers förlag: Stockholm, 1924.] Skogen 12: 32. 1925.—This is a handbook for amateur gardeners.—*Henry I. Baldwin*.

7234. SCHWERIN, FRITZ VON. Ueber die Möglichkeit der Verwachsung zweier Geholzenarten. [The possibility of union of 2 species of woody plants.] Mitteil. Deutsch. Dendrol. Ges. 34: 166-174. 1924.—Historical examples are given of views of the older writers as to grafting or budding species upon those belonging to entirely different families. A list is presented of different genera and families, where species of certain genera can be grafted upon others within the same family. The author observed sometimes that caterpillars of certain Lepidoptera attack different genera of the same family; these genera could be successfully grafted upon each other. This is not a rule, since, as far as known, *Salix* species cannot be grafted upon *Populus*, whereas caterpillars of the same species may attack both genera. Apple can sometimes be grafted upon pear, although pear cannot grow on apple. Pear grows on quince but not vice versa. Japanese quince grows on ordinary quince and pear. Sour and sweet cherries do well on *Cerasus mahaleb*, but the latter can not be grafted on cherry. In an appendix, the author mentions a *Salix babylonica* near Ravello that is apparently grafted on *Populus nigra*. An example is given of a successful graft of *Hamelis virginica* on *Corylus avellana*; the latter instance is important since it is the first successful graft recorded between 2 species belonging to 2 different families.—*J. C. Th. Uphof*.

7235. SINGH, R. K. Root-pruning of the mango. Agric. Jour. India 18: 648-651. 1923.—It is generally believed that the mango will not bear root-pruning. In the author's experience mango seedlings from 2 to 3 years of age withstand close root-pruning as well as any other plant. There is little difference in the growth made by a pot-grown plant transplanted to the field with all its cramped and tangled roots and that made by a plant raised in the ground and subsequently transferred to another place after severe root-pruning. *A. Howard*.

7236. SINNING, FR. Guevina avellana Molin., der Chilenische Haselnussbaum: "Avellano". [G. avellana Molin., the Chilean hazelnut tree: "Avellano."] Mitteil. Deutsch. Dendrol. Ges. 33: 218. 1923.—*Guevina avellana*, a native of Chile, grows rapidly, reaching a height of 15 m. The wood is used in Chile for the manufacture of furniture. It is recommended as a shade tree.—*J. C. Th. Uphof*.

7237. SPRENGER, CARL. Ueber allerlei Sträucher Griechenlands. [Various shrubs from Greece.] Mitteil. Deutsch. Dendrol. Ges. 33: 206-214. 1923.—On the island of Corfu is found a form of *Rosa muschata*, i., *korfuana* Kell., which grows along hedges and in shrubbery. The flowers are pure white. For securing rose-oil, the flowers are collected early in the morning or during bright nights, as during this time the scent is strongest. In addition the author describes and locates the Greek species of *Sambucus*, *Erica*, *Tamarix*, *Euphorbia dendroides* and other *Euphorbia* species.—*J. C. Th. Uphof*.

7238. SPRENGER, CARL. Ueber allerlei Sträucher Griechenlands. [Various shrubs from Greece.] Mitteil. Deutsch. Dendrol. Ges. 34: 194-200. 1924.—Fruits of *Arbutus unedo* are eaten and frequently sold on the market. *Vitex agnus castus* serves to hold sand dunes; its twigs are used for basket work. A number of *Artemisia* species are described, especially *A. abrotanum* which is sometimes cultivated and has escaped from cultivation. *Artemisia arborescens* is advised for pot growing. Cultivated plants of *A. absinthium* are richer in oil but less bitter than the wild forms. The wood of *Phillyrea* is used for furniture making. The author mentions especially *Phillyria media*.—*J. C. Th. Uphof*.

7239. STEVENS, HERBERT W. Marketing of soft fruits. Jour. Dept. Lands and Agric. [Ireland] 24: 140-143. 1 fig. 1924.—Methods of improving the picking and marketing of strawberries, raspberries, and black currants are given.—*Donald Folsom*.

7240. TUFTS, W. P., AND G. L. PHILP. Pollination of sweet cherry. California Agric. Exp. Sta. Bull. 385. 3-28. 1925.—Sweet cherry varieties may be roughly divided into 2 classes, early bloomers and late bloomers, when the period of their effective bloom is considered. All sweet cherry varieties tested produce satisfactory amounts of pollen and under most conditions have a satisfactory artificial germination in a 12% sugar solution. All sweet cherry varieties thus far tested have proved self-sterile, including Abundance, Advance, Black Bigarreau, Black Heart, Black Republican, Black Tartarian, Bing, Burbank, Burr Seedling, Chapman, Centennial, Cleveland, Downer, Early Purple, Lambert, Long Stem Royal Ann, Major Francis, Mezel, Napoleon (Royal Ann), Pontiac, Rockport, and Wood.

Napoleon, Lambert and Bing are inter-sterile. Advance and Rockport are inter-sterile. Early Purple and Rockport are inter-sterile. Results indicate that many so-called varieties of cherries are in fact types. This is especially true from a pollination standpoint. It will be necessary to isolate inter-fertile "strains" of the more important kinds of cherries and propagate from these before uniformly high yielding orchards can be secured.—A. R. C. Haas.

7241. WIENKER, H. *Lonicera involucrata*, unempfindlich gegen Rauch. [*Lonicera involucrata*, resistant against smoke.] Mitteil. Deutsch. Dendrol. Ges. 33: 223-224. 1923.—*Lonicera involucrata* is very resistant to smoke and is recommended for planting in areas where there are factories.—J. C. Th. Uphof.

7242. YEAGER, A. F. Fruit culture in North Dakota. North Dakota Agric. Exp. Sta. Bull. 188. 1-23. 24 fig. 1925.—The fruits discussed consist of apples, plums and plum hybrids, grapes, currants, gooseberries, raspberries, strawberries, and other minor berries and nuts, several of which are native. The discussion comprises mainly the proper varieties, methods of cultivation and pruning, and handling the crop. Some of the figures indicate what may be done by cross-breeding.—L. R. Waldron.

7243. YEAGER, A. F. Vegetable varieties for North Dakota. North Dakota Agric. Exp. Sta. Bull. 187. 1-27. 9 fig. 1925.—All garden varieties capable of cultivation in North Dakota and a few novelties are discussed. Under each crop are listed different varieties which have been tested at the station, and those suitable are starred.—L. R. Waldron.

MORPHOLOGY, ANATOMY AND HISTOLOGY OF VASCULAR PLANTS

E. W. SINNOTT, *Editor*

(See also in this issue Entries 6982, 7508, 7525, 7544)

7244. CLARK, LOIS. The embryogeny of *Podophyllum peltatum*. Minnesota Studies Plant Sci. (Studies Biol. Sci. No. 4) 1: 111-137. Pl. 20-25, fig. 1-8. 1923.—The author traces the development of the embryo and calls attention to the peculiarities of development and arrangement which would seem to show that *Podophyllum* belongs to the Ranunculaceae rather than to the Berberidaceae, on account of its acyclic arrangement, and the irregular number of flower parts, as well as through the anatomy of its transition area from stem to root as revealed by the study of the developing embryo.—L. O. Regeimbal.

7245. GIANNINI, GIANNINA. Sulla struttura della radice della *Periploca graeca* L. [Structure of the roots of *Periploca graeca* L.] Atti Soc. Toscana Sci. Nat. Mem. 35: 131-140. Pl. 3. 1924.—The roots examined varied in size from 0.5 mm. in diameter taken from plants 1 month old to those 13.4 cm. in circumference from 22 year-old specimens. The root structure of *Periploca graeca* is compared with that of the stem of the same plant.—Edith K. Cash.

7246. LASSER, HANS. Zur Entwicklungsgeschichte des Prothalliums und des Embryos bei *Salvinia natans*. [Development of the prothallium and embryo of *Salvinia natans*.] Flora 117: 173-220. 41 fig. 1924.—The structure of the macrospore wall, in particular the distribution of air in the wall, determines that the spore floats in a definite position. This also determines the position of the prothallium in its early stages, placing the axis of the archeogonium parallel to the surface of the water. Later, the prothallial wings act as stabilizers. A detailed account is given of the succession of cell divisions in the prothallium and in the embryo. Cases of apogamy were found.—A. G. Stoekey.

7247. MARCELLO, LEOPOLDO. Breve nota su alcuni casi teratologici nel *Raphanus sativus*. [Note on cases of teratology in *Raphanus sativus*.] Boll. Soc. Nat. Napoli 34 (Ser. 2, 14): 163-165. Fig. 1-5. 1921-1922 [1923].—Notes and illustrations are given of several cases in which the tap-root of *Raphanus* is split up into several ramifications of varying dimensions.—Edith K. Cash.

7248. MONTEMARTINI, LUIGI. L'ascensione dell'acqua nel fusto delle piante. [Ascent of water in plant stems.] Atti Soc. Italiana Prog. Sci. Riunione 13: (1-10). 1924.—The quantitative and qualitative variations of wood parenchyma cells at different heights and their combinations, varying according to the species or the individual plant or even in rela-

tion to the external conditions, are phenomena of interest in the problem of the ascent of water. It has been observed by the author that with a variation in number or extent of organs of transpiration and elements of absorption in the upper part of a plant there is a corresponding modification in the osmotic force of the roots, which does not manifest itself immediately, but appears to develop somewhat slowly. The increase in number of living cells in the vascular tissue from the base toward the top of the plant is of great importance; the role played by surface tension still remains to be studied.—*Edith K. Cash.*

7249. PAPE, H. Zur Kenntnis der Buchen mit korkiger Rinde. [Beeches with rough bark.] Mitteil. Deutsch. Dendrol. Ges. 34: 289-293. 1 pl. 1924.—Beeches which have a rough bark are scattered in different localities of Europe. The author distinguishes 2 groups: *Fagus sylvatica* var. *quercoides* and those called "stone beeches." A list is given of localities, type of bark, age of tree, condition of soil, and other important data on individual trees. In 1924, near Lemgo in Lippe, a tree was found with warty bark, and in chopping the wood, workmen found that the bark was remarkably hard, whereas the wood was softer than that of the normal beeches.—*J. C. Th. Uphof.*

7250. SCHMIDT, LOUIS. Ungewöhnliche Baumformen in Thüringen. [Unusual shapes of trees in Thuringia.] Mitteil. Deutsch. Dendrol. Ges. 34: 139-143. 4 pl. 1924.—Peculiar tree shapes of *Pinus*, *Larix*, *Tilia*, *Fraxinus*, *Fagus* and other genera are described.—*J. C. Th. Uphof.*

7251. SCHWERIN, FRITZ VON. Abbild eines Eisernes Kreuzes im Stammholz. [Imprint of an iron cross in the wood of a stem.] Mitteil. Deutsch. Dendrol. Ges. 34: 356-358. 2 fig. 1924.—Near Ursprung, Saxony, a stem of *Fraxinus* was cut which showed clearly throughout the stem in various cross sections a distinct maltese cross.—*J. C. Th. Uphof.*

MORPHOLOGY AND TAXONOMY OF ALGAE

WM. RANDOLPH TAYLOR, *Editor*

(See also in this issue Entries 6957, 6968, 6969, 6975, 6980, 6983, 6985, 6992, 7014, 7159, 7312, 7408, 7439, 7456, 7460, 7501, 7564, 7565, 7568)

7252. ANONYMOUS. [Rev. of: JANET, CHARLES. *Le volvox*. Troisième mémoire: Ontogénèse de la blastea volvocéene. I. (Ontogenesis of the volvox blastula. I.) 10 + 179 p. Pl. 5-21. Protat Freres: Macon, 1923.] *Nature* 115: 11. 1925.

7253. BOYSON, V. F., AND R. VALLENTIN. *The Falkland Islands*. 414 p. 34 pl. 1 map. Clarendon Press: Oxford, 1924.—This general historical and topographical sketch of the islands includes (Part IV) a description of the general natural history. Chap. 19, dealing with the West Falklands, records plankton samples of *Chaetoceros debile*, *C. convolutum*, *C. sociale* and *Phaeocystis Poucheti*. Chap. 22 deals with the general features of the kelp vegetation, giving notes on the habits and habitats of *Lessonia nigrescens*, *L. flavicans*, *L. frutescens*, *Durvillea Harveyi*, *D. antarctica*, *Desmarestia Rossii*, and *Macrocyctis pyrifera*, which reached a measured length of 195 feet.—*Wm. Randolph Taylor.*

7254. BRUTSCHY, A. Missbildungen an Diatomeen. [Deformations of diatoms.] *Mikrokosmos* 17: 21-22. 2 fig. 1923.—Deformations due to mechanical strains produced in mounting and to partial solution of the test by long standing in water are described. Deformations present in nature are figured for *Synedra acus* Ktz., *S. vitrea* Ktz., *S. ulna* Ehrb., and for an *Eunotia*, and described for others where they have given rise to varietal names.—*Wm. Randolph Taylor.*

7255. CZURDA, V. [Rev. of: FRITSCH, F. E. *The terrestrial algae*. Jour. Ecol. 10: 220-236. 1922 (see Bot. Absts. 12, Entry 3022).] *Arch. Protistenk.* 49: 303-305. 1924.

7256. DENIS, M., ET P. FRÉMY. Une nouvelle Cyanophycée hétérocystée: *Anabaena Viguieri*. *Bull. Soc. Linn. Normandie 7e Ser.* 6: 122-125. 1 pl. 1923 [1924].—*A. Viguieri* n. sp., here described, is related to *A. variabilis* Kuetz. and *A. planctonica* Brunth. and forms a water-bloom on the pool of Huelgoat, in Brittany.—*M. Denis. (Transl. W. R. Taylor.)*

7257. ERDTMAN, G. Pollenstatische Untersuchungen einiger Moore in Oldenburg und Hanover. [Pollen in some moors of Oldenburg and Hanover.] *Geol. Foren. Stockholm*

Forhandl. 46: 272-278. 1924.—This is primarily a study of pollen in peat. In a sub-recent sample from Grienewaldmoor, O. Borge has determined the following: *Cylindrocystis Brebissonii*, *Cosmarium trilobulatum* and *Staurastrum pygmaeum* f. *tetragona*.—Wm. Randolph Taylor.

7258. FALGER, F. Die erste Besiedelung der Gesteine. [The first invaders of the rocks.] Mikrokosmos 16: 13-17, 45-49, 81-84. Illus. 1922-1923.—This is an introduction to methods of microscopic examination of rocks for the study of their fauna and flora. The penetration of bacteria, blue-green algae, green algae, diatoms and fungi is indicated for the several types of rocks, and their significance as an ecological association and their effects on the rock are described.—Wm. Randolph Taylor.

7259. FRÉMY, P. Description de deux Oscillariées filamenteuses nouvelles. [Description of two new Oscillatoriaceae.] Bull. Soc. Linn. Normandie 7e Ser. 6: 7-15. 1 pl., 2 fig. 1923 [1924].—*Schizothrix Arnotti* n.sp. from the East Indies and *Lynbya Corbieri* n.sp. from Carquebut near Carentan (Dept. de la Manche) are described and figured.—M. Denis. (Transl. W. R. Taylor.)

7260. FRÉMY, P. [Rev. of: FRÉMY, P. L'étude des algues dans la Manche. (The study of algae in La Manche.) Mem. Not. & Doc. Publ. Soc. Agric. Archeol. Hist. Nat. Dept. Manche 34: 74-87. 1922.] Bull. Soc. Linn. Normandie VII. 6: (29-30). 1924.—The reviewer indicates that the original article contains a historical sketch of the work of the noted algologists of this Department, and a discussion of those territories requiring further investigations.—Wm. Randolph Taylor.

7261. GEITLER, LOTHAR. Gymnodinium amphidinioides, eine neue blaugrüne Peridinee. [Gymnodinium amphidinioides, a new blue-green Peridiniaceae.] Mez, Bot. Archiv 6: 110-111. 6 fig. 1924.—The new species is described. It was found with a typical microflora in a fish pond near Lunz, Austria, Aug. 1923.—William Seifriz.

7262. GEITLER, LOTHAR. Neue und wenig bekannte Cyanophyceae (Blaualgae). I. Chroococcaceae, Chamaesiphonaceae. [New and little known blue-green algae.] Arch. Protistenk. 50: 89-112. 19 fig. 1924.—The author describes, with original references and figures (of those marked with asterisk), the following algae: *Rhabdoderma gorskii* Wolszynska; *Synechococcus endobioticus* Elenk. et Hollerbach; **Aphanocapsa koordersi* Stroem.; *A. endophytica* G. M. Smith; *A. elachista* W. & G. S. West var. *planktonica* G. M. Smith; **Gloethece linearis* Naeg. var. *composita* G. M. Smith; *G. vibrio* N. Carter; **Aphanothece clathrata* W. & G. S. West var. *brevis* Bachmann; *A. pulverulenta* Bachmann; *A. protohydrae* Hayren; *A. salina* Elenkin & Danilov; *Chroococcus helveticus* Naeg. var. *consociato-dispersus* Elenkin; **C. cumulus* Bachmann; **C. westii* (West) Boye Petersen; *C. minor* (Kg.) Näg. f. *violacea* Wille; **C. limneticus* Lemm. var. *elegans* G. M. Smith; Idem. var. *distans* G. M. Smith; *C. dispersus* (v. Keissl.) Lemm. var. *minor* G. M. Smith; *Placoma violacea* Setchell & Gardner; *Anacystis elabens* (Breb.) Setch. & Gard.; *Chloroglea conferta* (Kuetz) Setch. & Gard.; **C. lutea* Setch. & Gard.; *Microcystis aeruginosa* Ktz. var. *maior* (Witttr.) G. M. Smith; *M. protocystis* Crow; *M. elabens* (Menegh.) Ktz. var. *maior* Bachmann; *M. pseudo-filamentosa* Crow; *M. pulvereae* (Wood) Migula var. *incerta* (Lemm.) Crow; Idem. f. *elongata* Crow; *Oncobyrsa sarcinoides* (Wisl.) Elenkin; Idem. var. *fulvo-cubica* Elenkin; Idem. var. *irregulariter-consociata* Elenkin; Idem. f. *pallida* Elenkin; Idem. f. *fusca* Elenkin; Idem. var. *sparsa* Elenkin; *Paracapsa siderophila* Naumann; *Merismopedia insignis* Schkorbatov; *M. convoluta* Breb. f. *minor* Wille; *M. hyalinum* Kg. f. *salina* Wille; *M. elegans* A. Braun var. *maior* G. M. Smith; *Cocopedia limnetica* Troitzkaja; **Dermocarpa hemisphaerica* Setch. & Gard.; *D. sphaerica* S. & G.; **D. sphaeroidea* S. & G.; **D. suffulta* S. & G.; **D. chamaesiphonoides* Geitler; **D. fucicola* Saunders; *D. pacifica* S. & G.; **D. protea* S. & G.; *Cyanocystis parva* Conrad; *Xenococcus minimus* Geitler; **X. acervatus* S. & G.; *X. gilkeyae* S. & G.; *X. cladophorae* (Tilden) S. & G.; *X. pyriformis* S. & G.; *X. chaetomorphae* S. & G.; *Pleurocapsa gleocapsoides* S. & G.; **P. entophysaloides* S. & G.; *Hyella littorinae* S. & G.; **H. linearis* S. & G.; **H. socialis* S. & G.; *H. terrestris* Chodat; **Radaisia laminariae* S. & G.; **R. subimmersa* S. & G.; *R. clavata* S. & G.; **R. epiphytica* S. & G.; *Chamaesiphon incrustans* Grun. f. *asiatica* Wille; Idem. f. *longissima* Wille; **C. filamentosus* Ghose; **C. cylindricus* Boye Petersen; *Gomphosphaerica aponina* (Kuetz.) S. & G.—R. P. Hall.

7263. HARNELL, J., AND M. R. NAYUDO. A contribution to the life history of the Indian sardine with notes on the plankton of the Malabar coast. Madras Fisheries Bull. 17: 129-197. 10 pl. 1924.—For the oil sardine May-Aug. is a diatom-food period, Sept.-Nov. is a Peridinean period and Dec.-Apr. includes a time of miscellaneous feeding, during which diatoms, tested infusorians, Heliozoa, larval bivalves and Copepoda are consumed. The genera and to some extent the species concerned are given, both of the ingested types and of the general plankton. The genera of greatest importance are: *Biddulphia*, *Ditylium*, *Coscinodiscus*, *Pleurosigma*, *Rhizosolenia*, *Fragillaria*, *Nitzschia*, *Thalassiosera*, *Chaetoceras* and *Trichodesmium*. *Pleurosigma* is most prolific during Jan.-Feb., *Trichodesmium* and some species of *Coscinodiscus* during March-Apr., and *Ditylium* during May-June. *Ceratium* and *Dinophysis* reach their maximum during Nov.-Dec. and *Noctiluca*, which is abundant throughout the year, swarms especially during June, August and September.—Wm. Randolph Taylor.

7264. HARRIS, G. T. The preparation and mounting of freshwater algae. Watson's Microscope Rec. 1924³: 9-12. 1924.—Methods of preservation and suitable fixing fluids are given. Preservation in glycerin is recommended and staining in Hofmann's Blue after potassium permanganate and alum or iron-alum haematoxylin or iron-alum haematin followed by mounting in glycerin or glycerin jelly.—Wm. Randolph Taylor.

7265. HUSTEDT, E. Die Bacillariaceen-Vegetation des Sarek-Gebirges. [The diatom vegetation of the Sarek Mountains.] Naturwiss. Untersuch. Sarek-Gebirges Schwedisch-Lappland 3: 525-626. Pl. 16-22. 1924.—The following new forms are described: *Eucocconeis lapponica*, *Eunotia pseudopectinalis*, *Frustulia styriaca* var. *subrostrata*, *Navicula Hambergi*, *N. Heufleriana* var. *septentrionalis*, *Nitzschia regula* var. *robusta*, *Pinnularia interrupta* var. *minutissima*, *Stauroneis obtusa* var. *lapponica*, and *Surirella Lemmermanni*.—The flora is rich, consisting of 285 species. The principal genera are *Pinnularia*, *Eunotia*, *Cymbella* and *Gomphonema*. The bulk of the vegetation is of forms with a range to the south; the arctic forms are numerous in species but not in bulk, although the general character of the diatom vegetation is arctic.—Wm. Randolph Taylor.

7266. KILLIAN, C. Le cycle evolutif du *Glenodinium montanum* (Klebs). [The developmental cycle of *G. montanum*.] Arch. Protistenk. 50: 50-66. Pl. 4-5, 2 fig. 1924.—The author concludes that *G. montanum* is a true Peridinin in which the encysted condition is the more prominent one. The cysts of this species are more like those of typical motile Peridinians than had been hitherto suspected. The study of other Phytodiniaceae is urged. The adult multicellular cyst, and also stages in the formation of the microcyst, in cellular division of the cyst, in sporulation of the cysts and in the encystment of the dinospores, are described and figured. Nuclear division is not described. A review of the literature is included.—R. P. Hall.

7267. KNIGHT, MARGERY. Studies in the Ectocarpaceae. 1: The life history and cytology of *Pylaiella littoralis* Kjellm. Trans. Roy. Soc. Edinburgh 53: 343-360. 6 pl. 1924.—A periodic study of large numbers of marked plants indicates that a considerable change in branching and habit occurs in the course of a season, and it is suggested that the many varietal names given to forms of this species apply merely to seasonal phases. Cultural experiments confirm this view. *P. littoralis* is primarily epiphytic on fucoid hosts, although found on other algae, rocks and woodwork. In early spring the young plants appear on *Ascophyllum nodosum* and mature there. The first products of this crop germinate on *Fucus vesiculosus*. Toward the end of the summer a 3rd wave appears on *F. serratus*. Plants on *Ascophyllum* reach 5-6 inches in length, on *Fucus* 10-12 inches, and exceptionally 42 inches. Plants on *Ascophyllum* are 90% plurilocular, 10% plurilocular or unilocular on same plant or unilocular. Plants on *Fucus* are unilocular except 2% on *F. serratus* and 15% on *F. vesiculosus*, these being plurilocular or both plurilocular and unilocular.—By removal of overhanging *Fucus* a mat of *Plumaria elegans* bearing young cystocarps was caused to produce young tetrasporangia within 8 days.—About 20 chromosomes are present on the premeiotic metaphase plates. In the development of the unilocular sporangia the characteristic changes of the maturation division occur. The chromatophores and pyrenoids also increase in number. After the post-meiotic divisions the chromatophores become cupped around the

nuclei and the separation of the spore masses occurs. About 1 minute intervenes between the liberation of the zoospore and the inception of active motility, which may last for 30 minutes. Germination takes place after about 2 days. Plants were grown to fertile maturity and always developed plurilocular sporangia.—The plurilocular sporangia are produced by longitudinal, radial and tangential mitoses of a branch, and each cell ultimately contains 1 nucleus, 2 pyrenoids and 2 chromatophores. The internal cell walls finally break down and the gametes are shed through 1 or more pores. If to fuse sexually, they unite immediately after being shed by the anterior end after entanglement of the cilia. Fusion may occur between gametes of equal or unequal size. With respect to those which develop parthenogenetically it was found that this occurs most commonly in the summer. Cytological examination has shown that the majority of spores from plurilocular sporangia are neutral swarm-spores, formed on diploid plants which are potentially able to produce unilocular sporangia. In other cases the development of the plurilocular sporangia on diploid plants was by ordinary mitosis to the 4th or 5th division, after which the haploid number of chromosomes was found.—*Wm. Randolph Taylor.*

7268. LEMOINE, MME. PAUL. *Mélobésiées recueillies à Rockall par la croisière Charcot en 1921.* [Melobesiaceae collected at Rockall.] Bull. Mus. Hist. Nat. [Paris] 29: 405, 406. 1923.—Rockall is a small island, 100 m. in circumference, situated between Ireland and Iceland. The 4 following encrusting forms of Rhodophyceae, which the writer reports as new for the island, were collected by an expedition which touched there in 1921: *Lithothamnium polymorphum*, *Lithophyllum lichenoides*, *L. (Dermatolithon) hapalidioides*, and *L. (Dermatolithon) pustulatum*.—*John M. Fogg, Jr.*

7269. MAINX, F. *Über eine Zygnemaceae mit roten Zellsaftfarbstoff.* [A Zygnemacean with red cell sap.] Lotos 71: 183-186. 1923.—The species studied resembled *Zygnema purpureum* Wolle. The physical and chemical properties of the pigment are described.—*Wm. Randolph Taylor.*

7270. MAINX, F. [Rev. of: GARD, M. *Recherches sur une nouvelle espèce d'Euglene (Euglena limosa nov. spec.)* Bull. Soc. Bot. France 69: 184-196; 241-250; 306-313. 1922 (see Bot. Absts. 14, Entry 2733).] Arch. Protistenk. 49: 301-303. 1924.

7271. MAINX, F. [Rev. of: PUYMALY, A. DE. *Adaptation à la vie aerienne d'une Algue verte du groupe des Volvocales (Chlamydomonas fungicola n. sp.).* Adaptation to aerial life of a green alga of the Volvocales.] Compt. Rend. Acad. Sci. Paris 176: 1739-1741. 1923 (see Bot. Absts. 13, Entry 1795).] Arch. Protistenk. 50: 276-277. 1925.

7272. MAINX, F. [Rev. of: PUYMALY, A. DE. *Reproduction des Vaucheria par zoospores amiboides.* (Reproduction of Vaucheria by amoeboid zoospores.) Compt. Rend. Acad. Sci. Paris 174: 824-827. 1922 (see Bot. Absts. 12, Entry 552).] Arch. Protistenk. 50: 277. 1925.

7273. MIGULA, W. *Grünalgen.* [Green algae.] Mikros. Naturfreunde 3: 43-49. 15 fig. 1925.—This is an elementary introduction to the structure and classification of the green algae.—*Wm. Randolph Taylor.*

7274. PARDO, L. *Variation mensual del Plankton en aguas de Valencia.* [Monthly variation of the plankton in the waters of Valencia.] Assoc. Espanol. para Prog. Sci., Congr. Salamanca 1923: 17-27. 1924.

7275. PEARSALL, W. H. *The phytoplankton of Rostherne Mere.* Mem. and Proc. Manchester Literary and Phil. Soc. 67: 45-55. 1923.—The Mere lies on drift (boulder clay and sand) over Triassic Red Marl and the depression is supposed to have been formed by the solution of underlying rock salt. The Mere is 1,283 yards long and 700 yards broad. Its greatest depth is 100 feet but about $\frac{1}{2}$ of it is less than 50 feet in depth. It is surrounded by woods, cultivated land, a considerable area of peat, and on the eastern margin is a reed swamp. The water is slightly calcareous, and rich in nitrogenous organic matter. A table of the relative importance of the most abundant species gives the maximum numbers observed (in thousands):—Myxophyceae: *Aphanizomenon flos-aquae* 123,500, *Microcystis* spp. 170, *Anabaena flos-aquae* 60, *Coelosphaerium Kutzingianum* 19. Peridineeae: *Ceratium hirundinella* 13,400, *Peridinium Willetii* 80. Bacillariaeae: *Fragilaria crotonensis* 1,617, *Asterionella gracillima* 1,670, *Coscinodiscus lacustris* 271, *Fragilaria capucina* 260, *Melosira varians* 24. Chlorophyceae: *Staurostrum paradoxum* 105, *Closterium aciculare* 12, *Eudorina ele-*

gans 10. This phytoplankton, therefore, shows few Desmids, and comparatively few diatoms in contrast to the majority of previously described British lakes. It is also distinct in the remarkable number of individuals present at any one time, and in contrast to the mountain lakes, Rostherne Mere contains a comparatively limited number of species. There is a distinct periodicity in quality of the plankton with a distinct winter-spring phase of diatoms, a summer phase in which *Ceratium* is very prominent, and an autumn phase dominated by *Aphanizomenon*. The maxima of the different planktons are in some degree dependent upon environmental conditions. June–August 1913, was a drought period and coincided with the maximum *Aphanizomenon* development of that year as did similar conditions in 2 other years. High temperature favors abundant development of Myxophyceae. A partial drought seems to be more effective in producing a maximum in autumn than in spring. Rainfall seems to prevent the development of Myxophyceae. The author discusses the variation of O₂ and CO₂ in the water in relation to variations in the plankton.—*John H. Schaffner*.

MORPHOLOGY AND TAXONOMY OF BRYOPHYTES

ALEXANDER W. EVANS, *Editor*

(See in this issue Entries 7279, 7564)

MORPHOLOGY AND TAXONOMY OF FUNGI, LICHENS, BACTERIA, AND MYXOMYCETES

H. M. FITZPATRICK, *Editor*

J. E. FLYNN, *Assistant Editor*

(See also in this issue Entries 6987, 6993, 7258, 7408, 7477, 7478, 7483, 7484, 7518, 7564)

FUNGI

7276. ANONYMOUS. Report of the Imperial Mycological Conference. 1924. 22 p. H. M. Stationery Office: London, 1924.—The report contains the resolutions adopted by the conference and a summary of the discussions held.—*J. E. Flynn*.

7277. BLAGIAČ, K. Ist *Collybia inarmillata* Schulz. identisch mit *Clitocybe tabescens* Scop., und nur eine ringlose *Clitocybe mellea* Wahl.? [Is *Collybia inarmillata* Schulz identical with *Clitocybe tabescens* Scop., or only a ringless *Clitocybe mellea* Wahl.?] Glasnik Hrvatskog Prirodoslovnoga Društva [Zagreb] 33¹: 45–49. 1921.—*Collybia inarmillata*, which Schulzer took to be a relative of *Armillaria mellea* lacking an annulus, is very common in the surroundings of Zagreb. The author identified *Collybia inarmillata* with *Clitocybe tabescens* and affirmed in detail that the fungus has, aside from a remote similarity, nothing in common with *Armillaria mellea*.—*I. Pevalek (translated)*.

7278. BLUMER, S. Die Perithezien des Eichenmehltaus (*Microsphaera alphitoides* Griff. et Maubl.) [Perithecia of the oak mildew.] Mitteil. Naturf. Ges. Bern 1924: 44–46. 1925.—The perithecia of the oak mildew were found in Switzerland for the first time in 1923. They are distinguished from those of the forms of *Microsphaera alni* on *Alnus* and *Viburnum Opulus* chiefly by their size and by the number of appendages. Since the identity of the European oak mildew with the North American *Microsphaera quercina* (Schwein.) Burr. is not established as a certainty, the name *Microsphaera alphitoides* Griff. & Maubl. is preferred for the European mildew.—*Author (translated)*.

7279. CUFINO, LUIGI. Aggiunte alla flora crittogamica dei dintorni di Napoli. [Additions to the cryptogamic flora of the vicinity of Naples.] Boll. Soc. Nat. Napoli 32 (Ser. 2, 12): 108–111. 1919 [1920].—The species of hepatics and fungi listed were collected in 1903, 1906, and 1909, and form a supplement to a previous paper on the cryptogamic flora of this region.—*Edith K. Cash*.

7280. FISCHER, ED., UND EUG. MAYOR. Zur Kenntniss der auf Gramineen und *Thalictrum*

lebenden heteroecischen Puccinien. [Contribution to knowledge of the heteroecious species of *Puccinia* occurring on grasses and *Thalictrum*.] Mitteil. Naturf. Ges. Bern 3: 28-39. 1924.—In the introduction the authors give a compilation of the heteroecious species of *Puccinia* which form teleutospores on grasses and aecidiospores on *Thalictrum*. *Puccinia Thalictri-Distichophylli* n. sp. ad. int., occurring on *Trisetum distichophyllum* forms its aecidia, according to experimental investigation, on *Thalictrum foetidum*. *T. glaucum* and *T. palmatum* are only slightly infected. Since *Thalictrum flavum*, *T. minus* and *T. aquilegifolium* were not infected in these experiments, the new species is distinct from *Puccinia persistens*, *P. triticea*, *P. Elymi* and the forms on *Poa nemoralis* and *Agropyron cristatum*. On the other hand, *Aecidium Thalictri-foetidi* P. Magn. is apparently identical with *Puccinia Thalictri-Distichophylli*. This species is distinguishable morphologically from *Puccinia Distichophylli* Ed. Fischer by the absence of paraphyses in the Uredo form. If the presence or absence of paraphyses in the Uredo form constitutes a characteristic of a species then in the group of *Puccinia* spp. which form their aecidia on *Thalictrum* there would be further species to be distinguished. The form on *Poa nemoralis*, which forms paraphyses abundantly, must be separated from *Puccinia persistens*. Since *Trisetum distichophyllum* occurs only in the Alps, *Puccinia Thalictri-Distichophylli* must be described as endemic in the Alps.—S. Blumer (translated).

7281. GICKLHORN, J. Studien an Zoophagus insidians Som. einen Tiere fangenden Pilz. [Studies on *Zoophagus insidians* Som., a fungus attacking animals.] Glasnik Hrvatskog Prirodoslovnoga Društva [Zagreb] 34²: 198-227. 1922.—Having received abundant materials from Graz and Zagreb, the author makes a further contribution to the morphology of this fungus. It is in his opinion one of the Pythiaceae. He used microchemical methods and the principal part of the work concerns infection by means of sensitive short hyphae. Swarm-sporangia (swarmspores have 2 lateral cilia, equal in length), conidia and abstricted hyphae serve to propagate the fungus. Gametes are perhaps produced also.—I. Pevalek (translated).

7282. JENKINS, ANNA E. The citrus scab fungus. Phytopathology 15: 99-104. Fig. 1-4. 1925.—Citrus scab has for several years been attributed to *Cladosporium citri* Massee although several observers have expressed doubt as to the relation of this fungus to the disease. The present paper reports observations on the cultural characters of the organism isolated from young scab spots and, by inoculation tests, proved to be the true cause of the disease. The fungus was compared in parallel cultures with *Sphaceloma ampelinum* DeBary from grape and *Plectodiscella veneta* (Sacc.) Burkholder from raspberry. Close relationship to these was shown by certain cultural characters, but differences in minor points seemed to justify regarding them as distinct species. The name *Sphaceloma fauvelletii* n. sp. is suggested for the citrus scab organism and a detailed description of the fungus is given.—B. B. Higgins.

7283. MARCHAL, É., ET STERNON. Sur les rapports existant entre des formes conidiennes du type *Ramularia* et le genre *Entyloma*. [The relation existing between conidial stages of the form genus *Ramularia* and the genus *Entyloma*.] Bull. Soc. Roy. Bot. Belgique 57: 51-55. 1 pl. 1 fig. 1924.—The authors describe *Entyloma Oenotherae*, found on *Oenothera Lamarckiana* (Gembloux-Belgium), which has the conidial form of *Ramularia* and the chlamydospores of *Entyloma*. They have encountered the chlamydospores in the case of *Ramularia armoraciae* and in the case of *Ramularia variabilis*, but they do not refer these forms by name to the genus *Entyloma*. On the other hand they have not encountered the chlamydospores in the case of *R. agrestis* Sacc., *R. Alismatis* Faut., *R. Bullotae* C. Mass., *R. Betae* Rost., *R. coccinea* Fel., *R. Dronici* Sacc., *R. Geranii* West., *R. Macrosporum* Pers. and *R. microspermum* v. Thüm.—E. DeWildeman (translated).

7284. MARTIN, ELLA MAY. Cultural and morphological studies of some species of *Taphrina*. Phytopathology 15: 67-76. Fig. 1-2. 1925.—Single spore cultures of *Taphrina Johansonii*, *T. communis*, *T. mirabilis*, *T. Coryli*, *T. deformans*, and *T. coerulescens* were obtained by attaching a bit of ascus-bearing host tissue inside a petri dish cover and inverting over a dish of poured nutrient agar. Single spores were then located under a microscope, marked and transferred to other plates. Cultures were grown on potato-dextrose agar, malt agar, and pea agar. In all species the number of spores in an ascus was indefinite, due to the budding of the spores. This budding process continued on all media, bacteria-like colonies of

conidia being produced. In the center of old colonies thick-walled cells, larger than typical conidia, were produced. These appear to be resting cells. Upon germination they continue the budding process like conidia. Similar cells have been found among the asci on the host plants, suggesting that they may serve to carry the fungus over winter. Inoculations were made with cultures of *T. deformans* on peach leaves and on burr oak with cultures of *T. coeruleascens*. In both cases the conidia produced short hyphae which entered the stomata of the host leaves.—*B. B. Higgins.*

7285. SARTORY, A. *Champignons parasites de l'homme et des animaux.* [Fungous parasites of man and animals.] Fasc. 1. P. 3-39. 1920.—The 1st part of this fascicle deals with general considerations and the remaining 5 parts with consideration of parasites belonging to the 5 groups of fungi: Myxomycetes, Phycomycetes, Basidiomycetes, Ascomycetes and Hyphomycetes. Fungous parasites of man and animals belong chiefly to the Phycomycetes and Ascomycetes.—*E. L. Felix.*

7286. SARTORY, A. *Champignons parasites de l'homme et des animaux.* [Fungous parasites of man and animals.] Fasc. 2. P. 43-88. Pl. 1-2, fig. 1-5. 1920.—An undetermined amoeboid organism previously described by Parize as a parasite of *Cyprinus auratus* is placed in the Acrasieae. The organism is easily destroyed by adding calcium chloride or bicarbonate of soda to the aquarium water.—Inoculations, by Podwysotszki, of guinea pigs, rabbits and other animals with spores of *Plasmodiophora brassicae* resulted in the production of ulcerated tumors the size of a small hazelnut. Histological study demonstrated in the center of the tissue necrotic areas which contained numerous spores of the parasite. Other genera of the Myxomycetes containing parasitic species are *Ophriomyces*, *Zoomyxa*, *Lycogala* (?), *Haplococcus* (?), *Myxastrum*, *Protomyxa* and *Peltomyces*.—The chytrids parasitic on man and animals are species of *Nucleophaga*, *Sphaerita*, *Protascus* *Olpidium*, *Olpidiopsis*, *Myzocyttium*, *Achlyogeton*, *Catenaria*, *Nephromyces*, *Rhizophidium* (?), *Chytridium* and *Polyrrhina*.—Parasitic species of 2 genera of the Mucoraceae are discussed, namely, *Mucor* and *Lichtheimia*. *Mucor racemosus* Fres. which has been reported as parasitic on birds is not pathogenic to animals in the laboratory. A mycosis of the ear is ascribed to *Mucor pusillus* Jakowski and not to *Mucor ramosus* Lindt., *M. corymbifer* Cohn and *M. ramosus* Lindt. are considered synonyms of *Lichtheimia corymbifera* Cohn.—Infections of *Acridium peregrinum* by *M. exitiosus* Massee were obtained by ingesting or spraying with a spore suspension. Entomophthorous fungi appear to lose their virulence on artificial media.—*E. L. Felix.*

7287. SARTORY, A. *Champignons parasites de l'homme et des animaux.* [Fungous parasites of man and animals.] Fasc. 3. P. 91-173. Pl. 3-4, fig. 6-27. 1921.—Parasitic species of *Lichtheimia*, *Rhizopus* and *Rhizomucor* of the Mucoraceae are described. Both *Rhizopus equinus* Constantin & Lucet and *R. equinus* var. *annamensis* Bernard are pathogenic to rabbits. *Mortierella* (Mortierellaceae) includes an undetermined species parasitic on the cat.—Infection by members of the Mucoraceae may be obtained by introducing the spores into the veins, peritoneum, and trachea of the animal, but not by introducing them into the digestive tube. The organs most frequently attacked are the kidneys, striate muscles, liver, lungs, heart, spleen and intestines.—In the Entomophthorales, species of *Empusa*, *Entomophthora*, *Tarichium* and *Massopora*, parasitic on insects, are discussed. The presence of rhizoids in *Entomophthora Carpentieri* Giard, which emerge from the ventral surface of the insect, is said to warrant the creation of the sub-genus *Lophorhiza*.—The parasitic species of the Saprolegniales include the genera *Saprolegnia*, *Achlya*, *Leptomitus*, *Pythium*, *Lithopythium*, *Ostracoblabe*, *Achlyogeton*, *Aphanomyces* and certain doubtful forms. A discussion of the parasites of the Saprolegniales is given.—*E. L. Felix.*

7288. SARTORY, A. *Champignons parasites de l'homme et des animaux.* [Fungous parasites of man and animals.] Fasc. 4. P. 179-308. Pl. 5-9, fig. 28-42. 1921.—Cutaneous blastomycosis occurs both in America and Europe and is present especially on the uncovered parts of the body. The disease in general is characterized by the production of pustules which grow and coalesce, presenting an elevated, papillate surface with abrupt edges. The microorganisms which occur in the pus and enlarged cells of the tissue reveal differences with the different cases of the affection. Potassium iodide treatment has proved most effective in control.—Isolations from lesions of blastomycosis of the brain have yielded a yeast corre-

sponding to that of Busse. A local infection of the vertebral column has been observed.—Blastomycosis is an infectious malady of man and animals, and is caused by yeasts which have been improperly grouped under the general name Blastomycetes. Entrance and penetration is through the skin, weakened intestine, appendix, pharynx and tonsils. Dissemination is effectuated by means of blood and lymph. The genera of yeasts containing parasitic species are *Schizosaccharomyces*, *Zygosaccharomyces*, *Cryptococcus*, *Saccharomyces*, *Zymonema*, *Willia*, *Saccharomycopsis*, *Monospora*, *Coccidiascus*, *Endomyces* and *Blastocystis*.—*E. L. Felix*.

7289. SARTORY, A. *Champignons parasites de l'homme et des animaux*. [Fungous parasites of man and animals.] Fasc. 5. P. 311-378. Pl. 10-14, fig. 43-50. 1921.—Species of about 45 genera of the Laboulbeniales, many of which occur in Europe, are described.—*E. L. Felix*.

7290. SARTORY, A. *Champignons parasites de l'homme et des animaux*. [Fungous parasites of man and animals.] Fasc. 6. P. 383-484. Pl. 15-40, fig. 51-59. 1921.—Members of the Sphaeriaceae, Nectriaceae, Gymnoascaceae and the genus *Trichophyton*, which are parasitic on man and animals are discussed. *Trichophyton sulphureum* Colcott-Fox is rarely found in France but is found very frequently in England. Scurf, caused by *Trichophyton* spp., is successfully treated by an electrical treatment which does not prevent the renewed growth of hair.—*E. L. Felix*.

7291. SARTORY, A. *Champignons parasites de l'homme et des animaux*. [Fungous parasites of man and animals.] Fasc. 7. P. 487-544. Pl. 41-44, fig. 60-66. 1922.—Species of *Microsporum*, *Epidermophyton*, *Lepidophyton*, *Aspergillus*, *Endodermophyton* and *Achorion* which affect the hair of man and animals are described. Certain species of *Microsporum* show preference to man, while other species are adapted to animals.—*E. L. Felix*.

7292. SARTORY, A. *Champignons parasites de l'homme et des animaux*. [Fungous parasites of man and animals.] Fasc. 8. P. 551-628. Pl. 45, fig. 67-76. 1922.—The members of the Aspergillaceae which are animal and human parasites are described. *Sterigmatocystis nigra* is not pathogenic.—*E. L. Felix*.

7293. SARTORY, A. *Champignons parasites de l'homme et des animaux*. [Fungous parasites of man and animals.] Fasc. 9. P. 631-682. Fig. 77-81. 1922.—This fascicle is devoted to the Fungi Imperfecti. *Proteomyces infestans* Moses & Vianna which is parasitic on man is probably a species of *Sporotrichum*.—*E. L. Felix*.

7294. SARTORY, A. *Champignons parasites de l'homme et des animaux*. [Fungous parasites of man and animals.] Fasc. 10. P. 687-721. Fig. 82-84. 1922.—This and the following fascicle further discuss the Fungi Imperfecti. Many monilial forms are given. *Parendomyces albus* Gueyrat & Laroche should be referred to *Endomyces albicans*.—*E. L. Felix*.

7295. SARTORY, A., ET L. MAIRE. *Compendium Hymenomycetum I, Amanita*. 447 p. 26 pl., numerous fig. Librairie le Francois: Paris, 1922-1923.—Some 40 species and a considerable number of varieties and forms are treated. For each species lists of synonyms and figures are given and a compilation is made of the diagnoses of each species as understood by various authors who have discussed it. The toxicity of certain species is discussed at length.—*J. E. Flynn*.

7296. TOGASHI, KOGO. *Fungi collected in the islands of Rishiri and Rebun, Hokkaido*. Japanese Jour. Bot. 2: 75-111. Pl. 5. 1924.—The author mentions 139 species, the following being described as new: *Puccinia Ligulariae*, *P. Nepetae*, *Phleospora Hiratsukae*, *Septoria Artemisiae-japonicae*, *S. Haleniae*, *Stagonospora Pini-pumilae*, *Cercospora gotoana*, and *C. Polygonati-Maximowiczii*.—*J. E. Flynn*.

7297. YOUNG, P. A. *A Marasmius parasitic on small grains in Illinois*. Phytopathology 15: 115-118. Fig. 1-5. 1925.—Small sporophores of a *Marasmius* were found attached to the stems of wheat, rye, barley, quack grass, and an undetermined species of grass. The sporophores were firmly attached just above the surface of the soil. Sections of the wheat culms showed the fungous mycelium deep in the partly disintegrated host tissue. The name *Marasmius tritici* n. sp. is proposed and a detailed description of the fungus is given.—*B. B. Higgins*.

BACTERIA

7298. BUCK, JOHN M. The differentiation of primary isolations of *Bacterium melitensis* from primary isolations of *Bacterium abortus* (bovine) by their cultural and atmospheric requirements. Jour. Agric. Res. 29: 585-591. 1924.—Guinea pigs were inoculated with blood from a human case of Malta fever, with the blood and milk of goats giving positive results to the agglutination test for this disease and the milk of cows which were eliminating *Bacterium abortus* from their udders. The guinea pigs were subsequently destroyed and cultured. Tubes were inoculated in sufficient numbers to permit the incubation of some under normal atmospheric conditions and others in closed jars in which 10% of the air was displaced by CO₂ gas. Both methods of incubation promptly yielded colonies of *Bacterium melitensis* when serum agar slants were sown with tissues of guinea pigs previously inoculated with the blood of the human case of Malta fever and with milk of the goats affected with this disease, whereas an atmosphere consisting partly of CO₂ was required for the development of colonies of *Bact. abortus* when a like medium was sown with the tissues of guinea pigs previously inoculated with milk containing *Bact. abortus*. In the case of primary isolations of *Bact. melitensis* and *Bact. abortus* (bovine) the difference in the atmospheric requirements were considered as being sufficiently marked to permit the differentiation of the 2 types of infection. It was noted however, that since laboratory strains of *Bact. abortus* (bovine) do not promptly become exacting in their atmospheric requirements when again introduced into animals the method of differentiation discussed could not be successfully utilized when subsequently dealing with such strains. The method is furthermore described as being of little or no value in distinguishing primary isolations of porcine strains of *Bact. abortus* from *Bact. melitensis*.—Author.

7299. GEITLER, L. Über *Polyangium parasiticum* n. sp., eine submerse, parasitische Myxobacteriacee. [Polyangium parasiticum, a new species of parasitic Myxobacteriaceae. Arch. Protistenk. 50: 67-88. 10 fig. 1924.—The new species *Polyangium parasiticum*, is described.—At first it was saprophytic, but later became parasitic in *Cladophora fracta* (?), in a pool at Vienna.—Figures of the formation of cysts and pseudoplasmodia are included.—R. P. Hall.

7300. PASCHER, A. [Rev. of: UTERMÖHL, H. Phäobakterien. (Bakterien mit braunen Farbstoffen.) (Bacteria with brown pigment.) Biol. Centralbl. 43: 605-609. 1923.] Arch. Protistenk. 50: 281-282. 1925.

7301. ZIRPOLO, GIUSEPPE. Ricerche su di un bacillo fosforescente che si sviluppa sulla *Sepia officinalis* L. (*Bacillus sepiae* n. sp.) [Researches on a phosphorescent bacillus developing on *Sepia officinalis* L. (*Bacillus sepiae* n. sp.).] Boll. Soc. Nat. Napoli 30 (Ser. 2, 10): 47-48. Pl. 2-3, fig. 1. 1917 [1918].—The luminous *Bacillus sepiae* n. sp., was isolated from dead bodies of *Sepia officinalis* in which it produced phosphorescence persisting for a period of several days. Cultural characters of the organism and the results of inoculations are recorded. The optimum temperature for the development and conservation of the bacillus is 24-28°C. The light produced is in general an intense green, variously modified by the culture medium used. A 6-page bibliography is included.—Edith K. Cash.

7302. ZIRPOLO, GIUSEPPE. I batteri fotogeni degli organi luminosi di *Sepiola intermedia* Naef. (*Bacillus pierantonii* n. sp.). [The photogenic bacteria of the luminous organs in *Sepiola intermedia* Naef. (*Bacillus pierantonii* n. sp.).] Boll. Soc. Nat. Napoli 30 (Ser. 2, 10): 206-220. Pl. 6. 1917 [1918].—The author summarizes the morphological, cultural, and pathogenic characters of *Bacillus pierantonii* n. sp., isolated from luminous organs of *Sepiola intermedia*.—Edith K. Cash.

7303. ZIRPOLO, GIUSEPPE. *Micrococcus pierantonii*. Nuova specie di batterio fotogeno dell'organo luminoso di *Rondeletia minor* Naef. [*Micrococcus pierantonii*, a new photogenic bacterium from the luminous organ of *Rondeletia minor*.] Boll. Soc. Nat. Napoli 31 (Ser. 2, 11): 75-87. 1 fig. 1918 [1919].—Study of the organism causing luminescence in *Rondeletia* shows it to be specifically distinct from *Micrococcus phosphoreus* and *M. pflügeri* described from other fishes, and it is therefore described as *Micrococcus pierantonii* n. sp.—Edith K. Cash.

7304. ZIRPOLO, GIUSEPPE. Osservazioni sulla biofotogenesi. [Observations on biophotogenesis.] Boll. Soc. Nat. Napoli 34 (Ser. 2, 14): 128-132. 1921-1922 [1923].—The distinction is pointed out between the bacteria of luminous organs in living animals and those which

develop on bodies post mortem. Luminous bacteria may be present in the same animal while living and after death, but workers in the subject are warned not to confuse the 2, as has apparently been the case in literature cited by the author.—*Edith K. Cash.*

PALEOBOTANY AND EVOLUTIONARY HISTORY

EDWARD W. BERRY, *Editor*

(See also in this issue Entries 6933, 7160)

7305. ANONYMOUS. Biological and palaeontological collecting in North China. *China Jour. Sci. and Arts* 2: 72. 1924.—Reference is made to the biological and palaeontological collecting which has been carried out in North China and Southern Mongolia by Emile Licent and Teilhard de Chardin during the past several years. Much of the material, which includes many thousands of specimens, animal and plant, as well as a large number of geological and palaeontological specimens, have been placed in the recently established Museum in Tientsin, North China.—In Mongolia, north of Kansu in the valley of the river Shara Osso Gol, there was discovered a rich find of fossils and archaeological specimens "in a complete series from the Miocene of the Upper Tertiary to Recent strata of Neolithic age." Some human skulls, possibly of Palaeolithic age, as well as some stone implements, were also found.—The palaeontological collection that has to do with man has been sent to Paris to be worked over by Marcellin Boule and Abbe Breuil.—*J. T. Illick.*

7306. BANCROFT, J. AUSTEN. Restoration of the oldest known forest. *Science* 61: 507-508. 1925.—An account of the restoration of the Gilboa Eospermatopteris Devonian forest group in the New York State Museum.—*E. W. Berry.*

7307. BELLIERE, M. Sur la présence des concrétions du type des coal-balls dans le terrain houiller belge (Paléontologie végétale). [The presence of concretions of the type of coal balls in the Belgian Carboniferous.] *Ann. Soc. Geol. Belgique* 42, B: 126-132. [1919].

7308. CROOKHALL, R. On the fossil flora of the Bristol coalfield. *Geol. Mag.* 62: 145-180. *Pl.* 6-9. 1925.—An elaborate systematic and stratigraphic account is given of the Carboniferous flora of the Bristol and Somerset coalfields in Gloucestershire and Somersetshire; 510 species are listed of which 3 are new, 6 are new to Britain, 62 are new to these fields, and 290 are recorded from new localities in the fields. *Eupecopteris camertonensis*, *Sigillaria kidstoni* and *Sigillaria nortonensis* are described as new, and many old species are critically discussed.—*E. W. Berry.*

7309. FORBES, A. C., LAURANCE H. TONKS, AND W. H. PEARSALL. The ages of peat deposits. *Nature* 115: 117-119. 1925.—Three separate communications are presented. Forbes calls attention to the distinction between marsh and mountain peat.—*O. A. Stevens.*

7310. FRITEL, P.-H. Sur la présence du *Goniopteris stiriaca* (Ung.) Al. Braun, dans les meulrières de Beauce. [*Goniopteris stiriaca* in the quarries of Beauce (France).] *Bull. Mus. Hist. Nat.* [Paris] 29: 407-409. 1923.—This fern has been identified in the millstones of Beauce (Aquitanian) Seine-et-Oise, France. Keys to the various species of *Goniopteris* as interpreted by Heer and by Schimper are appended, and a discussion of the synonymy involved is given.—*John. M. Fogg, Jr.*

7311. MACBRIDE, E. W. The theory of evolution since Darwin. *Nature* 115: 52-55, 89-92. 1925.—This is from a lecture delivered at Kings College on November 28. In conclusion, referring to Tornier's work the author states: "What is inherited, is according to Tornier, . . . a certain grade of germ weakness which in each succeeding generation produces the same morphological effects. If this view is correct—and all the evidence available conspires to show that it is—then mutations can have played no part whatever in evolution." They are the signs of weakened constitution and are weeded out.—*O. A. Stevens.*

7312. PRENDER, J. Les Mélobésiées dans les calcaires crétacés de la Basse-Provence. [The Melobesiaceae of the Cretaceous of lower Provence.] *Compt. Rend. Sommaire Géol. Soc. France* 7: 96-98. 1925.—The author in a memoir to be published describes 17 species of these algae. These are referred to the genus *Archaeolithothamnium*, the supposed ancestor of *Lithothamnium* and *Lithophyllum*. Common throughout the calcareous phases of the

Cretaceous in southeastern France, these algae appear to reach their maximum of variety and abundance in the Santonian stage of the Upper Cretaceous.—*E. W. Berry.*

7313. SCHWERIN, FRITZ VON. *Versunkene und versteinerte Wälder.* [Sunken and petrified forests.] *Mitt. Deutsch. Dendrol. Ges.* 34: 242-244. 1924.—The writer mentions the large and very old oak trees along the Oder and the destroyed subterranean forests on the Isle of Röm, on Föhr, and near Husum. The Husum forest was discovered when plans were made to make a new port. In New Zealand, south of Oakland, are prehistoric forests which are being commercially utilized. In the petrified forest of Hilbersdorf near Chemnitz, Saxony, silicification started first in the center instead of around the surface.—*J. C. Th. Uphof.*

7314. SCOTT, D. H. *Morphological questions from a Russian point of view.* *New Phytol.* 24: 38-49. 1925.—The unpublished views of the Russian botanist, V. Lashevsky, regarding the nature of *Ulodendron*, the ligule of the Lepidophytes, and the ligule of conifers are discussed. Lashevsky interprets the ulodendron scars as those of rhizophores and thus equivalent to the main axis of *Stigmara*. Scott regards this as a not impossible interpretation but with very little evidence to support it. Lashevsky considers the ligule of the Lepidophyta as a vestigial organ, representing the original sporangiophore fused with the underlying bract. Scott regards this as highly improbable. Lashevsky considers the relation of bract to ovuliferous scale in the conifers to have come about by displacement and reduction from a primitively independent position on the cone axis, the ovuliferous scale having gradually shifted to the axil of the bract for protection, and the subsequent union of the 2, regarding the gradations from *Pinus* to *Dammara* as a reduction series. The opposite view is equally maintainable and Scott takes the position that Lashevsky's hypothesis is interesting if true, but that it has no greater probability than the various interpretations that have already been advanced in explanation of the morphology of the cone.—*E. W. Berry.*

PATHOLOGY

FREDERICK V. RAND, *Editor*

LILLIAN C. CASH AND HARRY BRAUN, *Associate Editors*

(See also in this issue Entries 6816, 6823, 6830, 6838, 6846, 6860, 6864, 6872, 6897, 6904, 6916, 6928, 6929, 6988, 6990, 6992, 6993, 7025, 7033, 7037, 7038, 7042, 7044, 7052, 7053, 7057, 7058, 7069, 7072, 7087, 7099, 7113, 7144, 7175, 7182, 7185, 7187, 7190, 7197, 7200, 7201, 7207, 7212, 7218, 7227, 7229, 7230, 7247, 7280, 7281, 7282, 7285, 7286, 7287, 7288, 7289, 7290, 7291, 7292, 7297, 7299, 7302, 7450, 7508, 7516)

DISEASES CAUSED BY FUNGI

7315. AJREKAR, S. L., AND M. N. KAMAT. *The relationship of the species of Fusarium causing wilt and dry rot of potatoes in Western India.* *Agric. Jour. India* 18: 515-520. 1 pl. 1924.—The Fusaria causing dry rot of potato tubers and wilt of the potato plant in Western India are shown to be 2 distinct species, differing both in their morphology and physiology. They differ in spore measurements, form of growth, temperature relations and in the nature of the rot produced by each on the potato tuber. The authors consider that the dry-rot Fusarium agrees more nearly with *F. caeruleum* Lib. and the wilt Fusarium with *F. radiculicola* Wr. than with *F. trichothecioides* Wr. and *F. oxysporum* Schlecht. as suggested by Nagpurkar and Kulkarni.—*A. Howard.*

7316. ANDERSON, H. W. *Rhizopus rot of peaches.* *Phytopathology* 15: 122-124. 1925.—Examination of the market reports of condition of carload shipments of peaches originating in the State of Illinois showed Rhizopus rot to be much more prevalent than brown rot. The fungus is *R. nigricans*. It is suggested that better refrigeration may be beneficial in reducing the loss.—*B. B. Higgins.*

7317. BARSS, H. P. *Results of experiments in 1924 with various chemical dusts for smut control in wheat.* (Abstract.) *Phytopathology* 15: 127. 1925.

7318. BARSS, H. P. Serious blossom blight in Pacific Northwest orchards due to a species of *Monilia*. [*M. oregonensis*.] (Abstract.) *Phytopathology* 15: 126. 1925.

7319. BIRMINGHAM, W. A. "Leaf scorch" of strawberry. *Agric. Gaz. New South Wales* 36: 213-214. 3 fig. 1925.—Control measures for this disease, caused by the ascigerous stage of *Mollisia earliana*, consist in the avoidance of susceptible varieties, the destruction of any diseased material observed, and early spraying with Bordeaux mixture.—L. R. Waldron.

7320. BOUCHÉ, CARL. Einige Mittheilungen über wahrgenommene Zerstörung der Tulpen durch einem Pilz. [A tulip disease due to a fungus.] *Verhand. Vereins Beförderung Gartenbaues Königlich Preussischen Staaten*. 7: 221-223. 1831. Translation by H. H. WHETZEL, U. S. Dept. Agric. Library (typewritten), 1925.—The majority of the tulips in a garden appeared diseased when they were 2 inches or more in height, some of them showing infection only after they came into bloom. Soon afterwards their stems wilted just as though the bulbs had been injured by frost during the winter. The cause of the trouble was found to be a fungus produced on the tulip stems just under the surface of the soil. This was found to be a new species and named by von Schlechtendal, *Sclerotium tuliparum*. In an addition to this report, a technical description of the fungus is included.—Lillian C. Cash.

7321. BOYCE, J. S. Investigative work on white pine blister rust in the Pacific Northwest for 1923. (Abstract.) *Phytopathology* 15: 125. 1925.—Two observations are reported in which *Ribes* spp. were found infested with rust in British Columbia 80 and 110 miles, respectively, north of the known range of 5-needle pines.—B. B. Higgins.

7322. CLINTON, G. P., AND FLORENCE A. McCORMICK. Rust infection of leaves in petri dishes. Connecticut [New Haven] *Agric. Exp. Sta. Bull.* 260. 475-501. Pl. 25-26. 1924.—For 7 seasons experiments have been carried on relative to inoculating leaves in petri dishes with rusts. Thirteen genera of rusts have been tested in this way: *Caeoma*, *Coleosporium*, *Cronartium*, *Gymnoconia*, *Gymnosporangium*, *Kuehneola*, *Melampsora*, *Melampsoridium*, *Melampsoropsis*, *Phragmidium*, *Puccinia*, *Pucciniastrum* and *Uromyces*. Infections were produced with all but the first. Under these genera, 45 species were used and successful inoculations were secured with all but 17. Many hosts were used. Several new hosts were secured and a few hosts are for the first time experimentally established. Detailed descriptions for all the tests and a brief review of the literature, are given.—Henry Dorsey.

7323. COONS, G. H. Old and new facts about peach leaf curl. *Amer. Fruit Grower* 45: 33, 46-47, 53. 1 fig. 1925.—Peach leaf curl is said to be a disease which varies in its intensity with the season and one the outbreaks of which cannot be foretold; it is severe if cold, wet weather predominates as the 1st growth is pushing out. The history of both the early and recent investigations on peach leaf curl are reviewed, and control measures are discussed in detail. All authorities are said to agree that to prevent peach leaf curl a disinfection of the dormant buds is necessary; this may be done by use of a number of different fungicides. The severity of the losses from this disease are pointed out and it is said that no peach grower can afford to take a chance with leaf curl now that scientific investigations and years of demonstration point out a safe way to insure the crop.—Arthur S. Rhoads.

7324. COONS, G. H. Root diseases of the sugar beet. *Facts about Sugar* 18: 251-253. 1924.—Various fungi, including *Pythium debaryanum*, *Rhizoctonia* and *Phoma betae*, attack beet roots causing damping off and decay. The extent of injury is affected by weather and soil conditions and by the amount of infection on the seed. The control measures are based on cultivation, drainage and the use of good seed. Seed treatment is as yet in the experimental stage.—C. W. Edgerton.

7325. COTRELL-DORMER, W. Red rot in sugar cane. *Australian Sugar Jour.* 26: 734-735, 737. 1925.—When cutting cane plants in a field infected with red rot a slight red tinge in the visible flesh of the cane is often seen, and on splitting both stick and plant this discoloration is found to traverse one or more internodes, is variable in width, and is broken here and there by a short, narrow, transverse white patch. If the disease is well advanced one or more of the nodes have a dried or woody appearance. The markings are caused by the fungus, *Colletotrichum falcatum*, which invades and poisons the tissues of the cane.—The growth of the fungus on split canes in damp chambers is described.—The growers should avoid red-ended plants and draw their cuttings from healthy fields or at least from healthy

stools only. As red rot is found at its worst where soil aeration is very defective, the lower portion of affected fields should be drained, heavy dressings of lime applied, and leguminous green manures plowed under as frequently as possible. Q. 813 is one of the varieties most resistant to red rot, and D. 1135 is more or less resistant.—*Nellie E. Fealy.*

7326. CUNNINGHAM, G. H. Corticium disease of potatoes. New Zealand Jour. Agric. 30: 14-21, 93-96. 2 fig., 8 graphs. 1925.—Experiments with HgCl_2 gave unsatisfactory results in strengths of 1-200 to 1-2500 when tubers were immersed for as long as 90 minutes. Pre-soaking the tubers for 16 hours did not seem to increase the effectiveness of the treatment. Soaking the tubers for 16 hours in strengths of 1-500 to 1-1250 destroyed all sclerotia. Copper sulphate and Uspulun were tested, but were not found effective for practical use. All sclerotia were destroyed by a 2-hour immersion in 1-3000 HgCl_2 containing 10% HCl. The acid alone was not effective in strengths up to 25%. Treatments recommended are a 5-minute immersion in 1-1250 HgCl_2 plus concentrated HCl at the rate of 1 part to 150 parts of the HgCl_2 solution, and then covering the tubers in piles over night; or a 16-hour immersion in 1-8000 HgCl_2 plus concentrated HCl at the rate of 1 part to 1000 parts of the HgCl_2 solution.—*N. J. Giddings.*

7327. DASTUR, F. J. A preliminary account of the investigation of cotton wilt in Central Provinces and Berar. Agric. Jour. India 19: 251-260. 1924.—The constant accumulation of compounds of iron and aluminium in the tissues of wilting plants, the constant absence of these accumulations from the tissues of healthy plants and the complete failure to isolate a parasitic organism from the wilting plants suggest that the accumulation of these compounds may be correlated with cotton wilt and that the *Fusarium* sp. which has hitherto been considered the primary cause may be only a contributory factor.—*A. Howard.*

7328. DRECHSLER, CHARLES. Root-rot of peas in the Middle Atlantic States in 1924. Phytopathology 15: 110-114. 1925.—A survey of the pea growing districts of Maryland, Delaware, and New Jersey was made during the spring of 1924 to determine the prevalence of root-rot and the relative importance of the various organisms to which the damage has been attributed. Owing to the cool, damp weather prevailing during the spring, root-rot was very abundant. While a great variety of fungi were isolated from the diseased roots they were generally associated with *Aphanomyces euteiches* Drechsler, and this species is considered the primary cause of most of the root-rot. In about $\frac{1}{4}$ of the fields visited infection by *Aphanomyces* was so abundant that not a single healthy plant could be found. This heavy infestation could, in many cases, be traced to lack of proper crop rotation or to poorly drained soil.—*B. B. Higgins.*

7329. EDGERTON, C. W. "Dry rot" in buildings and building material. Louisiana Agric. Exp. Sta. Bull. 190. 1-12. Fig. 1-5. 1924.—The most common fungus causing dry rot of buildings and building materials in Louisiana is *Poria incrassata*. Rhizomorphs of this fungus may, from a moist place in the soil, grow up into buildings, stacks of lumber, etc., causing serious decay. Preventive measures are recommended such as use of clean lumber and of creosoted lumber or brick close to the ground. After the fungus has become established in a building the infected wood should be destroyed and creosoted lumber used for repairs.—*E. C. Tims.*

7330. FULTON, HARRY R., AND JOHN J. BOWMAN. Preliminary results with the borax treatment of citrus fruits for the prevention of blue mold rot. Citrus Indust. 6: 10, 30. 1925.—Investigations on the value of several chemicals in protecting citrus fruit against blue-mold rot seem to indicate that sodium borate, or borax, gives the best protection. Preliminary tests have shown that commercial borax (sodium borate) solution at strengths of 5-10%, applied to the surface of oranges or lemons and allowed to dry, greatly reduces blue-mold rot under experimental conditions that are usually favorable for rot development; details of the tests are given. Oranges and grapefruit handled in a commercial way and treated with the borax solution, showed a marked reduction not only of blue-mold rot but also of both *Phomopsis* and *Diplodia* stem-end rots. The borax treatment, in conjunction with careful handling of the fruit, is said to give promise of being commercially valuable in reducing losses from blue-mold rot.—*Arthur S. Rhoads.*

7331. HARTMAN, R. E., AND W. A. McCUBBIN. Potato wart. Bull. Pennsylvania Dept.

Agric. 7¹⁵: 1-28. Fig. 1-8. 1924.—The history, description and control of the potato wart disease (*Chrysophlyctis endobiotica*) are discussed in this paper. In addition, the provisions of Quarantine No. 6 are given together with the regulations adopted relative to and governing the quarantine.—*Lillian C. Cash*.

7332. HENDRICK, JAMES. An experiment on finger-and-toe by liming. Scotland Coll. Agric. Bull. 29. 1-15. Fig. 3-6. 1923.—Five years' work in growing turnips on 2 areas of land each divided into 3 plots, one of which was treated with ground lime, one with carbonate of lime and one untreated, is reported. Liming with either material to meet the lime requirement of the soil controls finger-and-toe disease. The disease is present in the limed soil but does not injure the crop, while on the unlimed soil the crop is seriously diminished.—*Henry Dorsey*.

7333. HOTSON, J. W. A preliminary report of the Uredinales of Washington. (Abstract.) Phytopathology 15: 126. 1925.

7334. HUNGERFORD, CHAS. W. Conclusions from four years' tests of various methods of seed treatment for bunt control in Idaho. (Abstract.) Phytopathology 15: 127. 1925.

7335. KAMMEYER, HANS. Dendrologisches aus Mecklenburg. [Dendrological note from Mecklenburg.] Mitteil. Deutsch. Dendrol. Ges. 31: 277. 1921.—A large Polyporus was found on a Salix tree, having a circumference of 2.25 m. and a diameter of 45 and 90 c.m.—*J. C. Th. Uphof*.

7336. KOTTUR, G. L. Notes on cotton wilt in the Southern Maratha country. Agric. Jour. India 19: 155-159. 1924.—Comparative trials of various strains of cotton on a uniformly infected field showed remarkable differences in regard to their susceptibility to wilt (*Fusarium* sp.). Differences in the environment may seriously affect the resistance of certain strains to this disease. Continued selection of resistant plants in a pure strain has given no result.—*A. Howard*.

7337. LUDWIGS, KARL. Wurzelpilze an Kakao. [Root fungi on cacao.] Tropenpflanzer 23: 167-173. 9 fig. 1920.—Root mycelia around roots of cacao, produced by *Lepiota* sp., cause considerable harm in Cameroon. The bark on the bases of the stem becomes uneven and the lenticells swell. There is an interruption in the movement of water from the soil and suddenly the leaves wither; this is especially noticeable at the beginning of the dry period, during which time the tree may die within 2 or 3 days. Splits are usually formed on the bark due to the drying. This part is interwoven with white mycelium which enters the medullary rays of the wood, growing quickly up into the stem. When the main root has not been damaged, a tree may remain alive for some time. Spores are of little importance in the distribution of the disease, since the mycelium moves mainly from root to root.—*Araucarias* were also attacked. *Hymenochaete noxia*, possessing a brown mycelium, was also found around the roots and base of the stems.—*J. C. Th. Uphof*.

7338. McKERRAL, A. A note on *Fusarium* wilt of gram in Burma and measures taken to combat it. Agric. Jour. India 18: 608-613. 1 pl. 1923.—The only remedy hitherto known for the wilt disease of *Cicer arietinum*, an important rotation crop for wheat, was to abstain from growing the crop in the same field for 5-10 years. In certain localities *Fusarium* wilt is so virulent as to destroy the whole crop. By numerous variety trials a resistant type (Karachi gram) has been isolated and an attempt is being made to replace all the gram in Burma by this type. A black variety which was highly resistant a few years ago is now very susceptible and the author raises the point as to how far any type is permanently immune to the disease.—*A. Howard*.

7339. McRAE, W. The operations against the bud-rot of palmyra palms on the East Coast. Agric. Jour. India 18: 487-500. 1 pl. 1923.—The operations against the bud-rot of palms (attributed to *Phytophthora palmivora*) are described. The disease is controlled by cutting out the crowns of diseased trees. During the 15 years of the operations 1,188,077 palmyra palms were dealt with. The crowns of 956,446 dead trees were destroyed and the diseased tissue was cut from 231,631 trees, about 94% of which recovered. The total expenditure from 1906 to 1921 was 3 lakhs of rupees. The author states that on the whole a considerable measure of success has been obtained.—*A. Howard*.

7340. MAXSON, ASA C. Sugar beet leaf spot. Facts about Sugar 17: 597, 1923; Through

the Leaves [Denver] 11: 452-454. 1923.—This disease is due to *Cercospora beticola*, the development, spread and control of which are briefly discussed.—*Lillian C. Cash*.

7341. MEER, J. H. H. VAN DER. **Verticillium-wilt of herbaceous and woody plants.** Mededeel. Landbouwhoogeschool Wageningen [Nederland] 28²: 1-82. Pl. 1-15, fig. 1-7. [1924].—This tracheo-mycosis, common in the cooler parts of Europe and America, has been observed on the following new hosts in Holland: (1) Cultivated herbaceous plants. *Papaver Rhoeas* L., *Eschscholzia californica* Cham., *Phlox Drummondii* Hook., *Aster chinensis* L., *Aconitum napellus* L., *Papaver orientale* L., *Malva Alcea* L., *Lupinus polyphyllus* Lindl., *Phlox decussata* Hort., *Antirrhinum majus* L., *Monarda didyma* L., *Campanula macrantha* Fisch., *Dahlia variabilis* Desf., *Gnaphalium margaritaceum* L., *Chrysanthemum indicum* Cass.—(2) Woody plants. *Ribes grossularia* L., *Ribes nigrum* L., *Ribes sanguineum* Pursh. var. *Lombartii*, *Prunus Cerasus austera* Ehrh. (morello), *Prunus Mahaleb*; the cherry varieties Meikers, Bieskers, Spaansche kers, Eysdensche kers and Hedelfinger Riesen; *Daphne Mezereum* L., *Syringa vulgaris* L., *Sambucus racemosa* L.—(3) Weeds. *Urtica urens* L., *Chenopodium album* L., *Solanum nigrum* L., *Erigeron canadensis* L., *Chrysanthemum Leucanthemum* L., *Senecio vulgaris* L.—*Verticillium albo-atrum* Rke. & Berth., and *V. Dahliae* Kleb. were isolated from various hosts which are noted, symptoms and experiments being described in detail. The former enters the uninjured rootlets of potato and cucumber by piercing the cell wall protuberances. Stem inoculations with both species of fungus proved them virulent after hibernation. It was found that potatoes as an intercrop in a cherry orchard may be a source of infection for the cherry trees. Stem and root inoculations made in May and June, and soil inoculations made before the middle of May caused the disease in cherry. Two seasons after inoculation most of the affected seedlings showed a browning of the annual ring of the year of inoculation. Unless the roots of a moderately infected cherry tree are infected anew, the woody cylinders of the following years remain healthy and the tree may outgrow the disease.—Cross inoculations with the 2 species of *Verticillium* isolated from different hosts gave infection in *Aconitum napellus*, *Lupinus polyphyllus*, *Phlox decussata*, potato, 1-year-old cherry, and tomato. Cucumber proved susceptible only to *V. albo-atrum*.—A literature list covers several pages. (See also Bot. Absts. 13, Entry 5249; and 14, Entry 6527.)—*Frederick V. Rand*.

7342. MILLARD, W. A., AND SYDNEY BURR. **The supposed relation of potato skin-spot [Oospora pustulans] to corky scab [Spongopora subterranea].** Rept. Internat. Conf. Phytopath. and Econ. Entomol. Holland P. 78-79. H. Veenman & Sons: Wageningen, 1923.—This is an abstract of a detailed account which appeared in Kew Bull. Inform. Roy. Bot. Gard. Kew 1923: [see Bot. Absts. 14, Entry 2838].—*F. Weiss*.

7343. MURPHY, PAUL A. **The development of blight in potatoes subsequent to digging.** Jour. Dept. Lands and Agric. [Ireland] 24: 103-116. 1924.—Blight (*Phytophthora infestans*) does not spread from one tuber to another in potatoes stored in pits, though sometimes secondary soft-rot seems to spread slightly. Either infection or spores may be present at the time of storage in apparently sound tubers, due to contact with blighted stalks or with contaminated soil. With no fresh contamination of the soil from diseased stalks, soil can remain infectious for about 40 days or less. Most of the infection found in storage appears within the first 40 days. The amount is increased by covering the pits with blighted stalks even for a short time, and by pit storage as compared with house storage. Hibernation occurs in tubers only and the disease in seed tubers can initiate aerial infection.—*Donald Folsom*.

7344. NEILL, J. C. **Loose smut of wheat.** New Zealand Jour. Agric. 30: 167-174. 2 fig. 1925.—Experiments in control of loose smut by the hot water treatment, are discussed. The seed was presoaked for 5-6 hours. Good control of smut was secured by presoaking at 63°F. and then dipping for 3 minutes at 131°F., for 5 minutes at 127°F., or for 10 minutes at 123°F. Good control was also secured by presoaking at 84°F. and then dipping for 3 minutes at 129°F., for 5 minutes at 125°F., or for 10 minutes at 123°F.—*N. J. Giddings*.

7345. PLAKIDAS, A. G. **Fusarium rot of the peach.** Phytopathology 15: 92-98. Fig. 1-6. 1925.—A *Fusarium* rot of peach fruits appears to be quite prevalent in California. Three distinct types of *Fusarium* have been isolated and tentatively identified as *F. asclerotium*

(Sherb.) Wr., *F. solani* (Mart. p. part.) App. & Wr., and *F. pirinum* Fries. Typical decay of peaches was produced by inoculating with pure cultures of each of these fungi. A bud-rot was also produced by spraying severed peach twigs with spore suspensions, but inoculations in the field were not successful.—*B. B. Higgins.*

7346. RATHBUN-GRAVATT, ANNIE. Direct inoculation of coniferous stems with damping-off fungi. Jour. Agric. Res. 30: 327-339. Fig. 1-2. 1925.—About 100 different fungous lines were used to inoculate coniferous stems directly without bringing the inoculum into contact with the soil. The results secured under the conditions of these experiments were as follows: *Corticium vagum* B. & C., *Fusarium* sp., *F. moniliforme* Sheld., *F. sporotrichioides* Sherb., *Gibberella saubinetii* (Mont.) Sacc. and *Pythium debaryanum* Hesse caused more or less damping-off of *Picea engelmanni* Engelm., *Pinus banksiana* Lamb. and *Pinus resinosa* Ait.; *C. vagum*, *F. moniliforme* and *P. debaryanum* caused damping-off of *Pinus caribaea* Morel.; *P. debaryanum* caused damping-off of *Abies nobilis* Lind. and *Pseudotsuga taxifolia* (Lam.) Brit.; *Botrytis cinerea* Pers., *Botrytis* spp. (small sclerotial types), *Cephalothecium roseum* Cda., *Fusarium acuminatum* E. & E., *F. arthrosporioides* Sherb., *Fusarium* spp. of the discolor section, *Fusarium* spp. of the elegans group, *F. hyperoxysporum* Wr., *Fusarium* sp. of the martiella section, *Fusarium* spp. of the solani group, *Phomopsis juniperovora* Hahn, *Phytophthora* sp., and *Rheosporangium aphanidermatus* Edson caused more or less damping-off of *P. banksiana* and *P. resinosa*; *Fusarium avenaceum* (Fr.) Sacc., *F. coeruleum* (Lib.) Sacc., *Fusarium* spp. of the culmorum group, *F. discolor sulphureum* (Schlecht.) Ap. & Wr., *F. orthoceras*? Ap. & Wr., *F. radicola* Wr., *F. trichothecioides* Wr., *F. vasinfectum* Atk., *Nectria ipomoeae* Hals., *Pestalozzia funerea*? Desm., *Phytophthora cactorum* (C. & L.) Sebrath., *P. fagi* Hart., *Pythiacystis citrophthora* Sm. & Sm. and *Pythium artotrogus* (Mont.) DeBary caused more or less damping-off of *P. resinosa*; *Fusarium oxysporum* Schlecht., *Thielavia basicola* (B. & B.) Zopf and *Verticillium* sp. did not cause damping-off of *P. banksiana* and *P. resinosa*; *Fusarium* spp. of the culmorum group, *F. vasinfectum*, *Pestalozzia funerea*? and *Pythium artotrogus* did not cause damping-off of *P. banksiana*; *Fusarium eumartii* Carp., *F. ventricosum* Ap. & Wr., *Mucor racemosus* Fres., and an unidentified Phycomycete did not cause damping off of *P. resinosa*; *Fusarium* sp. of the culmorum group and *Fusarium* sp. of the elegans group were not parasitic to *P. engelmanni*. *Botrytis cinerea*, *Fusarium sporotrichioides*, *Pythium debaryanum* and *Rheosporangium aphanidermatus* were the most virulent parasites in these experiments. In inoculating *Pinus resinosa* the virulence of the fungi when grown on corn meal agar was compared with that of the same fungi when they were grown on rice mush. A discussion is also given of the length of time elapsing between inoculation with some of the fungi and the appearance of damping-off.—*Author.*

7347. SIEMASZKO, WINCENTY. Pleśń liściowa, *Monilia foliicola* Woronichin, w s'wietle spostrzezen i badań biologicznych. [Biological investigations on the leaf-blight, *Monilia foliicola* Voronikhin.] Acta Soc. Bot. Poloniae 2: 81-98. Pl. 2. 1924.—*Monilia foliicola* was collected by Voronikhin on the Caucasian coast of the Black Sea on pear leaves (*Pirus communis* L.), on *Mespilus germanica* L. and on wild hazelnut (*Corylus avellana* L.). It was later collected on black alder (*Alnus glutinosa*) in Abchazia and in Poland. Observations made by the author in the Caucasus have shown that this fungus is to be found there in the submountainous zone 500-700 m. above sea-level and that it requires very moist conditions for its distribution. Under favorable conditions of high humidity, in shady valleys, infected pear leaves falling upon hazelnut bushes, spread the infection to the latter. The fungus does not occur on varieties of European pears and does not infect hazelnut trees cultivated on the coast of the Black Sea.—The author believes that the fungus should not be placed in the genus *Monilia*. It has *Monilia*-like pseudo-conidia which never fall off the chains. In nature the fungus occurs in the form of mycelia, the author finding a few microconidia in material from one locality only. On artificial media the mycelium does not fall into separate cells. The author regards the entire clusters of hyphae from the leaf as pseudo-sclerotia. The clusters when cut into pieces lose their ability to germinate. It is believed that the leaf-blight represents the degenerative form of *Sclerotinia* (which produces microconidia only) occurring in nature in the form of sterile mycelia. The temperature relations of the fungus are discussed. The author provisionally places the fungus in the genus *Moniliopsis*, naming it *Moniliopsis foliicola* (Voronikh).—*From author's summary.*

7348. SUNDARARAMAN, S. Bud-rot of coconuts caused by *Phytophthora palmivora*. Agric. Jour. India 19: 84-85. 1921.—Inoculation experiments showed that the fungus, *Phytophthora palmivora*, can produce typical bud-rot on mature trees.—A. Howard.

7349. TRYON, HENRY. Top rot of sugar cane. Sugar [New York City] 26: 454-456. 1924.—This is a summary of a previous article appearing in The Queensland Bur. Sugar Exp. Sta., Div. Path. Bull. 1. 1-56. Pl. 1-9. 1923.—C. W. Edgerton.

7350. VIZIOLI, JOSÉ. Estudo preliminar da molestia das folhas do cafeeiro causada pela *Hemileia vastatrix*. [Preliminary study on the disease of coffee due to *Hemileia vastatrix*.] x + 69 p. 24 fig. Sec. Agric. et obras publicas do estado de Sao Paulo, 1922.—The disease is discussed from the following standpoints: history, economic importance, host plants, geographic distribution, symptoms, etiology, histology of the infected host, ecology and control.—Lillian C. Cash.

7351. ZELLER, S. M. A case of *Verticillium* wilt (blue stem) [*V. alboatrum*] of black raspberry in Oregon. (Abstract.) Phytopathology 15: 125-126. 1925.

DISEASES CAUSED BY BACTERIA

7352. ANONYMOUS. Gum disease of cane. Sugar [New York City] 26: 445. 1924.—The gum disease of cane has developed in a new district in Australia, proving particularly troublesome on the Richmond River.—C. W. Edgerton.

7353. ANDERSON, H. W. Shot hole or bacterial spot of peach. Amer. Fruit Grower 45: 26, 38-39. 2 fig. 1925.—This is a discussion of the shot-hole or bacterial spot of the peach caused by *Bacterium pruni*, with special reference to history, nature and cause of the disease, losses, varietal susceptibility, overwintering, and control. From the experience of the past 5-6 years the author believes that nitrating with cultivation cannot be depended upon as a reliable method to control bacterial shot-hole, although this treatment appears valuable in many cases. His observations during a number of years lead him to believe that certain conditions of growth of the trees should be maintained in order to give the best control; a number of suggestions are given.—Arthur S. Rhoads.

7354. ANDERSON, P. J. Susceptibility of *Nicotiana* species, varieties and hybrids to tobacco wildfire. Phytopathology 15: 77-84. 1925.—The comparative susceptibility of 20 species of *Nicotiana* to wildfire [*Bacterium tabacum*] was tested. Those tested included *N. tabacum* (41 botanical and horticultural varieties), *N. rustica* (7 varieties), *N. alata* (3 varieties), *N. acuminata* Grah., *N. attenuata* Torr., *N. Biglovii* Wats., *N. Colossea* Andr., *N. glutinosa* L., *N. glauca* Grah., *N. Langsdorffii* Weinm., *N. longiflora* Cav., *N. nudicaulis* G. Watson, *N. paniculata* L., *N. plumbaginifolia* Viv., *N. quadrivalvis* Pursh var. *multivalvus* Gr., *N. repanda* W., *N. Sanderae* (*alta grandiflora* × *Forgetiana*), *N. suaveolens* Lehm., *N. sylvestris* Speg., and *N. wigandioides* Englm.—Seed were sown in plats in an ordinary tobacco seedbed. Inoculations were begun when the 1st leaves were as large as the fingernail and repeated every day or two during a month. For inoculum, a young wildfire spot was cut from a tobacco leaf, its surface sterilized, washed, and then crushed in a flask of bouillon. When the bouillon became clouded (24-48 hours) the culture was poured into a sprinkling can of water and sprinkled evenly over the young plants. The comparative susceptibility was judged by comparing the resulting infection with that produced on the Havana strain of *N. tabacum*. All of the 41 varieties of *N. tabacum* were found to be susceptible. The least susceptible were Maryland, Hester, Bafra, and Sumatra, in the order named. All varieties of *N. rustica* and of *N. alata* and also *N. repanda*, *N. nudicaulis*, and *N. attenuata* were highly resistant. All other species tested were susceptible but varied considerably in degree of susceptibility. When *N. nudicaulis* and *N. alata* were crossed, the resultant hybrids were resistant; but the hybrids failed to produce fertile seed, even when hand pollinated.—B. B. Higgins.

7355. NORTH, D. S., AND H. ATHERTON LEE. Java gum disease of sugar cane identical to leaf scald of Australia. Phytopathology 14: 587. 1924.

7356. SHERBAKOFF, C. D. Effect of soil treatment with sulphur upon crown gall in nursery apple trees. Phytopathology 15: 105-109. Fig. 1-3. 1925.—In a single experiment, sulphur, applied at the rate of 600 pounds per acre, appeared to reduce the number and size of the

crown galls produced on nursery apple trees. The sulphur was applied to alternate rows and thoroughly mixed with the soil in the furrow before the grafts were set.—*B. B. Higgins.*

DISEASES CAUSED BY ANIMAL PARASITES (INSECTS, NEMAS, PROTOZOANS, ETC.)

7357. BRUNI, N. *Recherches sur quelques phytoparasites de nature protozoaire.* [Studies of some protozoan parasites of plants.] Bull. Soc. Path. Exotique 18: 251-257. Fig. 1-3. 1925.—A parasite of *Acocanthera venenata* at Bologna, believed to be a trypanosome or related form, is figured and described. *Euphorbia geniculata* and *E. ipecaquana* showed withering and yellowing of leaves following inoculation with the parasitized latex, but the organism did not multiply in these plants.—No protozoans were found in 500 individuals of *Euphorbia peplus*, and of 530 plants of *E. cyparissias* examined, only 2 contained flagellates. These 2 plants showed no sign of wilt, but starch grains were diminished in number, deformed, and swollen, and motile parasites were abundant in stems, leaves, and peduncles. In addition to typical Leptomonas (or Herpetomonas) forms, forked individuals and leishmani-form bodies were present; some of the parasites had rhizoplasts. Inoculations of parasitized latex into *E. geniculata* and *E. ipecaquana* were without effect. White mice inoculated intraperitoneally with latex + bouillon died from the toxic effect of the latex; no parasites could be found in the blood or peritoneum. No parasites were found in the digestive tracts of the insects, *Aphthionia levigata* Fab., *Deilephila euphorbiae* L., and *Corizus capitatus* Fab. collected on Euphorbiaceae.—*Philip Brierley.*

7358. DOCTERS VAN LEEUWEN, W. M. *Lijst van de in mijn verzameling aanwezige Zooecidia van Nederland.* [List of my collection of zoocidia from the Netherlands.] Nederland. Kruidk. Arch. 1923: 328-356. 1924.—An alphabetical list is given of hosts upon which various zoocidia were found in the author's collection obtained in the Netherlands.—*J. C. Th. Uphof.*

7359. GERTZ, OTTO. *Tvenne av Eberhard Rosén 1749 beskrivna zoocecidier från Skåne.* [Two new zoocidia described by Eberhard Rosén in 1749.] (Swedish.) Bot. Notiser 1922: 336-342. Fig. 1-2. 1922.—During Linnaeus' earlier period 2 books on the flora of Scania, the most southern of the Swedish provinces, appeared: "Primitiae florae Scanicae," by JOHAN LECHE, in 1744, and "Observationes botanicae," by EBERHARD ROSÉN. Linnaeus drew freely upon the former for information in preparing his "Flora suecica," but the latter book he seems largely to have ignored, probably on account of the animosity which existed between him and Rosén. In Rosén's work were described 2 zoocidia [galls] on species of *Galium* and *Campanula*. The former was evidently on *G. verum* and produced by *Eriophyes galiobius* Can., the latter on *C. Trachelium* by *Eriophyes Schmaridae* Nal. The same gall has also been found on *Campanula rapunculoides* at Visby on the island of Gotland. Rosén also gave a detailed account of the Rinderpest which raged in the province during the 1740's. He thought that it was caused by the poison of some plant, and gave an extensive description of the vegetation, especially on the lowlands, with a list of 35 species. This is in fact the 1st trial of treating the flora of any part of Sweden from an ecologic standpoint.—Resumé in German.—*P. A. Rydberg.*

7360. HOWARD, L. O. *The needs of the world as to entomology.* Ann. Entomol. Soc. Amer. 18: 1-21. 1925.—"It will serve my present purpose . . . to head some thoughts that have come to me after about sixty years of greater or less attention to insects." This statement by the author epitomizes the theme of his address.—*Frederick V. Rand.*

7361. PERKINS, R. C. L., AND O. H. SWEZEY. *The introduction into Hawaii of insects that attack Lantana.* Bull. Exp. Sta. Hawaiian Sugar Planters Assoc. Entomol. Ser. Bull. 16. 1-72. Pl. 1, fig. 1-7. 1924.—The bulletin contains a detailed account of work with introduced insects, of letters exchanged in the course of the investigation, a list of insects observed in connection with *Lantana* in Mexico, a report on enemies of *Lantana camara* in Mexico and a chapter on the present status of *Lantana* and its introduced insect enemies.—*Lillian C. Cash.*

7362. YOTHERS, M. A. "Treehoppers," new orchard pests in the Pacific Northwest. Proc. 20th Annual Meeting Washington State Hort. Assoc. 1924: 97-102. [1925].—The 2 most common species of treehoppers in Washington, namely *Stictocephala pacifica* and *Ceresa basalis*, are discussed. The distribution, food and nature of injury, life history and control are given.—*Lillian C. Cash.*

INFECTIOUS CHLOROSES (MOSAIC AND PEACH YELLOWS GROUPS, ETC.)

7363. BRANDES, E. W. Mosaic's role in limiting Louisiana yields. Facts about Sugar 18: 610-611. 1924.—The low sugar yields in Louisiana are due to many factors, one of which is the mosaic disease. Surveys were made during 1919 and 1920 and these showed a rapid spread of the disease. At that time, large areas in the state were not as yet affected. Figures from the Philippines, Hawaii and Louisiana show that the disease causes varying losses. Certain varieties are immune, some are resistant, others tolerant. The different varieties are being tested in Florida and Louisiana.—*C. W. Edgerton.*

7364. BRANDES, E. W., AND P. J. KLAPHAAK. Growth stimulation and pest and disease control by hot water treatment of sugar cane seed. Louisiana Planter and Sugar Manuf. 71: 371-372, 392-394, 412. 1923.—The treatment of sugar cane with hot water had no effect on the mosaic disease. This treatment, however, stimulates the growth of dormant buds and kills insects such as the mealy bug and cane borer.—*C. W. Edgerton.*

7365. CHARDON, CARLOS E. La transmission del mosaico. [Transmission of mosaic.] Sugar [New York City] 26: 477-478. 1924.

7366. CROSS, WM. E. Canes that resist mosaic disease in Tucuman. Louisiana Planter and Sugar Manuf. 73: 468-469. 1924.

7367. CROSS, WM. E. Mosaic-resistant Java canes in Tucuman. Facts about Sugar 19: 250-251. 1924.—The methods of planting, cultivating and milling cane in Tucuman (Argentina) are discussed. The purple and striped canes have deteriorated seriously in recent years. This is attributed to the mosaic disease. Beginning in 1918 certain P. O. J. varieties of cane were introduced, especially numbers 36,213 and 234. These varieties have proved quite satisfactory in Tucuman.—*E. C. Tims.*

7368. CROSS, WM. E. The problem of sugar cane yields in Louisiana. Facts about Sugar 18: 442-443. 1924.—It is believed that the cane condition in Louisiana is similar to one that was met in Tucuman (Argentina). In the latter country, the common varieties gave decreasing yields from year to year. By bringing in seedlings from Java, greatly increased yields were obtained. The deterioration of the cane is said to have been due to the mosaic disease. The Java seedlings are resistant or tolerant to the disease. Other factors such as soil fertility, time of cutting and the effect of windrowing have also had their effect on cane yields.—*C. W. Edgerton.*

7369. DASTUR, F. J. The mosaic disease of sugar-cane in India. Agric. Jour. India 18: 505-509. 1 pl. 1923.—Two varieties of cane, D99 and Sathi 131, were found to be suffering from mosaic disease at Pusa. The author emphasizes the fact that although this serious disease has been present in these varieties on the Pusa Farm for at least 1 and possibly for 11 years, the other varieties adjacent to D99 and Sathi 131 have remained free from the disease. These explanations are possible: (1) The other varieties are immune to the disease; (2) under local conditions infection is impossible; (3) carriers of this disease are not present at Pusa.—*A. Howard.*

7370. EDGERTON, C. W., AND W. G. TAGGART. Tolerance and resistance to the sugar cane mosaic. Jour. Agric. Res. 29: 501-507. Pl. 1. 1924.—It is demonstrated that sugar cane mosaic spreads very rapidly under natural conditions in Louisiana. For this reason roguing has not been successful. Selection of apparently tolerant or resistant cane plants was made from fields which had been diseased for a number of years. The selected plants showed the disease in a much less severe form than the general run of diseased cane. Increased yields of 8 and 34% over the unselected cane are recorded for the selected. The evidence accumulated indicates quite strongly that a strain of cane may be developed which shows considerable resistance or tolerance to the mosaic disease. It is suggested that this phenomenon may be due to bud variation or to the gradual acquiring of immunity in the diseased plants, similar to that acquired in man and other animals.—*E. C. Tims.*

7371. JOHNS[ON], J. R. Control of sugar cane mosaic. Planter and Sugar Manuf. 74: 190-191. 1925.—Figures are given to show that in certain sections of Cuba the spread of sugar cane mosaic is very slow. For this reason frequent inspections and roguing of diseased plants are advocated as control measures.—*E. C. Tims.*

7372. PAGE, R. L. Mosaic disease: its eradication and control. Facts about Sugar 17:

14-15. 1923.—Sugar cane fields practically free of the mosaic disease were obtained by a thorough system of roguing. Using these fields for seed, the mosaic percentage in a Porto Rican district of 2500 acres was reduced from 90% to less than 0.5% in 3 years time.—*C. W. Edgerton.*

7373. RAMOS, R. M. Studies about the sugar cane mosaic. Louisiana Planter and Sugar Manuf. 73: 488-489. 1924.

7374. VEVE, R. A. Overcoming the mosaic disease at Fajardo. Facts about Sugar 18: 468. 1924.—The mosaic disease of sugar cane was reduced from 100% in 1918-1919 to 7.06% in 1922-1923 at Fajardo (Porto Rico) by a system of roguing.—*C. W. Edgerton.*

NON-PARASITIC DISEASES

7375. FUNK, GEORG. Vergleichende Beobachtungen über Winterfrostschädigungen an Koniferen. [Comparative observations of frost damage on conifers.] Mitteil. Deutsch. Dendrol. Ges. 32: 135-144. 1922.—In the last decades some unusually low temperatures occurred. The writer gives several examples of each of the 5 types of frost damage to conifers. (1) The youngest needles are killed and drop off during dry and warm weather (for example in *Picea orientalis*). (2) The oldest and strongest needles are damaged, whereas the young needles suffer but little injury (for example, *Abies Nordmanniana*). (3) All needles of various ages are damaged in the same degree; this type is well shown on *Abies nobilis*. (4) The youngest as well as the older twigs and also the needles are killed. This type has been noticed on species of the Taxaceae, especially on *Taxus baccata* var. *fastigiata* and on *Cephalotaxus Fortunei*. (5) Large or small parts of the youngest twigs become brown and drop off; this type is seen on the Cupressaceae, especially on *Chamaecyparis Lawsoniana* and *Libocedrus decurrens*.—*J. C. Th. Uphof.*

7376. HOFKER, H. Über den Einfluss der Winterwitterung auf die Gehölze mit besonderer Berücksichtigung des strengen Frostes im Winter 1916-17. [The influence of winter on trees and shrubs, especially of the heavy frost of 1916-1917.] Mitteil. Deutsch. Dendrol. Ges. 28: 196-207. 1919.—Various causes of death due to cold are being described. During the long hard frost of 1916-1917 many trees were killed even in the industrial area of Westfalen. *Prunus Laurocerasus* lost its leaves. *Rhododendron* varieties suffered but little. *Citrus trifoliata* on the eastern side of a house was damaged only on the lower twigs; the same condition was observed on *Araucaria imbricata*. *Chamaecyparis* and *Thuja* species remained normal. Needles of *Sequoia gigantea* were brown and many of its twigs dried out. Among the *Ligustrum* species, *L. ovalifolium* was the strongest, whereas other species either died or started to grow again at the base the following spring. In some localities, *Clerodendron trichotomum* did not suffer much more than usual, although in other places it was damaged. A list of species, with localities, is given, showing those killed, damaged or not damaged at all.—*J. C. Th. Uphof.*

7377. PRIESTLY, J. H. Tar, smoke and coal gas as factors inimical to vegetation. Sci. Prog. 18: 587-596. 1924.—The discussion is supported by an extended bibliography. Special stress is placed upon the deleterious effect of the unsaturated hydrocarbons in coal gas. The author believes that the toxicity of these substances is due to their interference with the normal functions of the endodermis, thereby causing roots and shoots to increase in girth rather than in length. He discusses means of detecting proportions of coal gas that would harm vegetation, and gives notes on the practical bearing of gas poisoning upon horticultural practice.—*L. A. Kenoyer.*

7378. SEEHAUS, P. "Blitzlöcher." ["Lightning holes."] Mitteil. Deutsch. Dendrol. Ges. 29: 332-333. 1920.—Three pines were killed by lightning; after their removal a number of other pines died in the neighborhood. The writer suggests that probably the lightning killed the mycelia around the roots, thus causing the trees gradually to starve.—*J. C. Th. Uphof.*

7379. WOCKE, E. Beobachtungen und Gedanken über Frostscha den in Westpreußen im Winter 1916-17. [Observations on frost damage in East Prussia in the winter of 1916-1917.] Mitteil. Deutsch. Dendrol. Ges. 28: 207-212. 1919.—During 2 decades the winters were mild; that of 1916-1917, however, was severe and meteorological data are given. The be-

havior of various species of plants is given. Many poorly nourished conifers died, whereas individuals of the same species having a better food supply were not damaged at all. Many frost splits were noticeable on the south and west sides of the stems of *Aesculus pavia* and *A. rubicunda*, and also in those of fruit trees. Walnut trees lost a considerable amount of wood. The Proskauer peach was very resistant to cold. Protection by covering of the trees and shrubs proved to be generally impracticable, but the writer recommends that good nourishment is very reliable as a winter protection.—*J. C. Th. Uphof*.

7380. ZIMMERMANN, F. *Die Wirkungen der Oppauer Explosion auf die Pflanzen*. [Effects of the explosion of Oppau on vegetation.] *Mitteil. Deutsch. Dendrol. Ges.* 32: 250. 1922.—On account of the mechanical action of the air due to the tremendous explosion in Oppau, entire rows of fruit trees were totally ruined, especially apple and pear trees which produce rather brittle wood. Some trees with heavy foliage were uprooted with heavy clumps of earth and removed to some distance. Stems of other trees were broken off or twisted. Even trees having a diameter of 40–60 cm. were damaged. Trees somewhat removed from the explosion lost many strong twigs. Cherry trees suffered least, as their wood is elastic. Stems of roses were broken off and had to be replaced. Many plums were ruined. Herbacious plants like sugar beets, mangelwurzel, maize and clover recovered after a heavy rain.—*J. C. Th. Uphof*.

DISEASES OF UNKNOWN CAUSE

7381. GILBERT, W. W., AND ERNST ARTSCHWAGER. *Watermelon internal browning*. *Phytopathology* 15: 119–121. *Fig. 1*. 1925.—Brown, necrotic areas developed in the parenchyma of the inner part of the rind. They show on the surface, at first, as water-soaked spots, later becoming bright yellow and $\frac{1}{2}$ inch or more in diameter. In mild cases the necrotic areas are scattered but in more severe cases they form an almost continuous circle around the entire melon. The cause of this abnormal condition has not been determined but is thought to be related to the moisture conditions prevailing at the time the melons are maturing.—*B. B. Higgins*.

7382. SHAPOVALOV, MICHAEL. *The significance of the 1924 outbreak of western yellow tomato blight in the United States*. (Abstract.) *Phytopathology* 15: 50. 1925.

7383. STEVENS, NEIL E. *Field observations on false blossom of the cultivated cranberry*. *Phytopathology* 15: 85–91. 1925.—The author reports many field observations tending to indicate the infectious nature of false blossom of cranberry [*Oxycoccus macrocarpus* Pers.]. That it is not due entirely to poor cultural conditions is shown by the observation that false blossom often occurs in well drained and well cultivated bogs. Until the cause of the disease can be definitely determined it seems unwise to plant vines from bogs where false blossom occurs. All the well-known cultivated varieties are susceptible to the disease.—*B. B. Higgins*.

7384. ZELLER, S. M. *Some facts about Loganberry "dwarf"*. (Abstract.) *Phytopathology* 15: 125. 1925.

GENERAL AND MISCELLANEOUS PATHOLOGICAL LITERATURE

7385. ANONYMOUS. *Badila cane*. *South African Sugar Jour.* 8: 881. 1924.—Badila is by far the most disease-resistant cane in Australia. H.Q.409 is believed to be highly resistant to both gumming and leaf scald and the safest variety for lands not suitable for Badila. Goru, 24A, and 24B are moderately healthy canes.—*Nellie E. Fealy*.

7386. ANONYMOUS. *Control of orchard and garden pests and diseases*. *New Zealand Jour. Agric.* 30: 44–49. 1 *pl.* 1925.

7387. ANONYMOUS. [Rev. of: PETCH, T. *The diseases of the tea bush*. *xii + 220 p. illus.* (3 col. *pl.*) Macmillan Co.: New York & London, 1923.] *China Jour. Sci. & Arts* 1: 629. 1923.—(See also Bot. Absts. 13, Entry 370.)

7388. AGEE, H. P. *Resistance to disease and adverse conditions by hardy sugar cane types*. *Louisiana Planter and Sugar Manuf.* 72: 75–76. 1924.—This is from the report of the committee in charge of the Experiment Station, Hawaiian Sugar Planters Association. On account of the definite indications that much of the world's sugar supply of the future

is to be produced from hardy canes growing with a minimum of care, varieties such as the Uba and Java seedlings are being tried in Hawaii.—*C. W. Edgerton.*

7389. AJREKAR, S. L. The problem of potato storage in Western India. *Agric. Jour. India* 19: 35-44. 1924.—The storage rots of potatoes in India consist of (1) dry rots caused by fungi (*Fusarium*, 2 sp., *Sclerotium Rolfsii* and *Sclerotium* sp.), and (2) wet rots caused by bacteria, mostly common soil organisms. Dry rots often become wet rots by bacterial invasion. All the fungi grow fairly well between 77° and 95°F., while the optimum temperature for the growth of the bacteria is between 86° and 104°F. "Heat rot" (Mann and Nagpurkar) is shown to be a form of bacterial rot and is quite distinct from "black heart." Physical heat by itself is not a primary cause of potato rots in Western India. Simple storage precautions such as rigorous rejection of all diseased and bruised tubers, fumigation, storage in bags and reduction of the temperature below 90°F. should be sufficient to keep the loss below 10%. It is doubtful whether cold storage would be economically possible.—*A. Howard.*

7390. BURKHOLDER, C. L. A handy home-made dust mixer. *Amer. Fruit Grower* 45²: 56. 1925.—Since many peach growers are now using the "dry mix" or "home mix" as a substitute for the old self-boiled lime-sulphur and the ingredients require thorough mixing before adding water or sifting into the spray tank, the author describes a simple device to do this work, which is in operation in the Barrett orchards at Henderson, Kentucky.—*Arthur S. Rhoads.*

7391. CASTLE, C. B. Combination tractor and sulphur blower. *Amer. Fruit Grower* 45³: 22. 1 fig. 1925.—A brief description is given of a combination tractor and sulphur blower designed for vineyard sulphuring in California and capable of doing 100 acres a day.—*Arthur S. Rhoads.*

7392. CHUPP, CHARLES. *Manual of vegetable-garden diseases.* xxiv + 647 p. 155 fig. Macmillan Co.: New York, 1925.—In this book an attempt is made to bring together the published information on plant diseases in an easily available form, more than 8,000 citations having been used in its preparation. Nearly every disease of vegetables described in literature has been dealt with, most attention being paid to symptoms and control. To make the discussions of greater value, especially to the student of plant pathology, many important references are given. The diseases of various hosts are treated in consecutive chapters, and a discussion of soil sterilization and of fungicides concludes the book.—*Lillian C. Cash.*

7393. COLBY, A. S. Principles and practices in small fruit culture. *Small fruit disease control.* *Amer. Fruit Grower* 45²: 57. 1925.—The author considers that spraying constitutes the most important single method of controlling diseases, which are believed to constitute one of the most important factors in the culture of small fruits. In addition, he discusses other methods of disease control, including insistence on the grower's part that he receive from the nurseryman true-to-name, disease-free stock only, the planting of kinds and varieties not subject to winter and other climatic injuries, the selection of more disease-resistant varieties, good culture, and other sanitary measures in the care and harvesting of the crop.—*Arthur S. Rhoads.*

7394. COTTRELL-DORMER, W. Disease in cane. *Ann. Rept. Queensland Bur. Sugar Exp. Sta.* 24: 54-57. 1924.—The results of a preliminary survey, with a view to obtaining data on the general distribution of the more important diseases and pests of sugar-cane in Queensland, are given. For each of the districts visited the diseases found are listed, together with statements as to their seriousness. A table shows the distribution of those most serious in the districts visited in 1924.—*Lillian C. Cash.*

7395. COTTRELL-DORMER, W. Pests and diseases of sugar cane. *Australian Sugar Jour.* 26: 733-734. 1925.—Mosaic disease was introduced probably 2-3 years ago into the Kelsey Creek locality and Cannon Valley of the Prosperine District, and because of lack of knowledge has spread rapidly. So far as known, the disease is entirely dependent on the little blue corn aphid for its transmission. This insect is very prolific and wherever its chief food plants, Johnston grass, sorghum, or corn, occur, it breeds in great numbers. Immediately on the appearance of the disease in the cane field the grower should destroy all Johnston grass in the vicinity and cease planting sorghum or corn near the field. Roguing where the plants are not too numerous and careful selection should be practised. Leaf

stripe and foot-rot (*Marasmius* sp.) were also found in the district, but to a slight extent only.—*Nellie E. Fealy*.

7396. COTTRELL-DORMER, W. **Sugar conditions in Australia.** *Sugar* 26: 444-445. 1924.—The sugar cane diseases known as knife cut, mosaic and bleeding were found in the Mackay District.—*C. W. Edgerton*.

7397. CROSS, W. E. **Present needs in cane disease control.** A rejoinder to Mr. A. H. Lee. *Internat. Sugar Jour.* 27: 26-31. 1925.—The author credits the pathologists rather than Government Experiment Stations and "some rather well-known cane men" with the introduction and spread of sugar-cane diseases, and makes numerous statements and quotes various authors in support of his stand. Interesting data are given relative to the origin and spread of downy mildew, Fiji disease, and especially mosaic disease.—*Nellie E. Fealy*.

7398. CROSS, W. E. **The problem of sugar cane yields in Louisiana.** *Facts about Sugar* 19: 181-185. 1924.—The various theories advanced to account for the decreased sugar cane yields in Louisiana are discussed. Such factors as soil depletion, unfavorable weather and poor cultivation are important, although the mosaic disease is the major factor concerned. It is suggested that the P. O. J. varieties 36 and 213 might help to increase cane yields in Louisiana.—*E. C. Tims*.

7399. DURUZ, W. P. **A cheap and easy way to make Bordeaux mixture.** *Amer. Fruit Grower* 45²: 12. 1925.—The disadvantages of the "single stream" method of preparing Bordeaux mixture, whereby the 2 diluted stock solutions are run simultaneously into the spray tank, are pointed out and the advantages of the tank-mixing method are shown. By the latter method the tank is filled $\frac{3}{4}$ full of water and the required amount of stock blue-stone solution poured through the screen and, after starting the engine to mix the solution, the stock milk-of-lime is run through the screen and water added to completely fill the tank.—*Arthur S. Rhoads*.

7400. DURUZ, W. P., AND B. D. MOSES. **Some facts about stationary spray plants.** *Amer. Fruit Grower* 45²: 41, 43, 56. 3 fig. 1925.—The conditions which influence timely spraying are discussed, as are also the location of the pumping outfit for a stationary spray plant, mains and laterals, practical results, and the advantages and disadvantages of this method of spraying. The authors believe that, just as the city water system has replaced the town pump, so the stationary spray plant will, to some extent, replace the portable spray rig.—*Arthur S. Rhoads*.

7401. EARLE, F. S. **Sugar cane mosaic and sugar cane chlorosis.** *Facts about Sugar* 19: 372. 1924.—Characters are given to differentiate the true mosaic disease from a form of chlorosis said to be due to malnutrition. In cases of chlorosis there is no speckling or mottling, but the leaves are a uniform shade of yellow or show a longitudinal striping. The stripes are never broken and irregular in outline as are those of the true mosaic disease. Punctures of certain small insects may also produce yellow speckling that may be mistaken for true mosaic.—*E. C. Tims*.

7402. EDGERTON, C. W., W. G. TAGGART, AND E. C. TIMS. **The sugar cane disease situation in 1923 and 1924.** *Louisiana Agric. Exp. Sta. Bull.* 191. 1-44. Fig. 1-8. 1924.—The extremely wet season of 1923 and the very dry season of 1924 helped to bring about the poor cane crops of those 2 years. But along with weather conditions, improper cultural practices, poor drainage and fertilization, cane borer infestation and the attack of several fungous parasites were influential in the decreased production. The red rot disease was severe in the winter of 1923, following heavy borer infestation, and bringing about a very low germination of the seed with the consequent bad stands of cane. Mosaic and root rot caused considerable losses over the entire cane belt of Louisiana. Several root rot fungi were isolated and the disease symptoms reproduced by inoculations with pure cultures. Several P.O.J. canes which have been introduced into the state have showed considerable promise because of their freedom from disease. The selection of healthy cane for use as seed is advocated.—*E. C. Tims*.

7403. GODFREY, GEO. H. **The application of certain organic mercury compounds in plant pathology.** (Abstract.) *Phytopathology* 15: 127-128. 1925.

7404. HODGSON, ROBERT W. **Citrus trunk and root disease control.** *Amer. Fruit Grower*

45²: 5, 44-45. 3 fig. 1925.—The importance of the trunk and root diseases of citrus trees is pointed out and it is stated that, unlike Florida, the diseases attacking the trunk and roots are the only ones of importance affecting citrus trees in California. This difference is thought to be due to the relatively low atmospheric humidity prevalent in California citrus districts and the periodic occurrence of high atmospheric temperatures. Only below ground are the moisture and temperature conditions considered likely to become favorable to the activity of diseases. The greater prevalence of these troubles in the coastal sections and their occurrence largely on the heavier soil types are believed to furnish evidence in support of this conclusion, as well as the facts that they rarely occur on the lighter soils or in the interior sections excepting where over-irrigation has been practised and the drainage is poor, or where the trees were planted so deeply that the bud unions are partially or entirely buried.—The brown-rot gum-disease (*Pythiacystis citrophthora*), said to be the most important of these diseases, gray-mold gum-disease (*Botrytis*), scaly bark or psorosis (cause unknown), and lemon shell bark or decorticosis (*Phomopsis californica*) are described with regard to history, occurrence and method of treatment. Experience and observation have shown that the best results are secured when treatment is given in early spring (April-May). The principal disinfectant used in the past has been Bordeaux paste. The occurrence of a special form of fumigation injury on trees treated with this compound, however, has caused many growers to abandon its use in favor of other disinfectants which apparently do not cause this type of injury. Among these are dilute Bordeaux wash, weak potassium permanganate, 5% carbolic acid in water, carbolineum, and other materials. On account of the slow action of these diseases and the fact that serious injury is not apparent until they have progressed to a point where treatment is costly and in some cases not always successful, the importance of an annual tree inspection is emphasized.—*Arthur S. Rhoads*.

7405. JOSEPH, GLENN HOWE. Interesting facts about spray materials. *Amer. Fruit Grower* 45²: 3, 22. 1925.—A brief account is given of the history and development of the use of arsenic, Paris green, lead arsenate, arsenate of lime, Bordeaux mixture, and lime-sulphur as spray materials.—*Arthur S. Rhoads*.

7406. KERN, H. Utmutatás a legfontosabb gyümölcsfabetegségek elleni védekezésről. [Protection against the most important diseases of the orchard.] 12 p. Pallas Press: Budapest, 1924.

7407. LEE, H. ATHERTON. Present needs in cane disease control. *Sugar* [New York City] 26: 433-435. 1924.—There are a number of sugar cane diseases which are not present in all sugar countries. These include the ones commonly known as Fiji disease, downy mildew, gumming disease, cane smut, sereh, leaf scald of Australia and red stripe of Hawaii. These should be kept out of the countries in which they do not occur, by quarantine.—*C. W. Edgerton*.

7408. [NADSON, G. A.] Надсон, Г. А. Тець деревьев и ее микрофлора. [Tree gummoses and their microflora. Contribution to phytopathology and microbiology.] (With German summary) *Болезни Растений* [Morbi Plantarum (Petrograd)] 12: 41-60. 1923.—On the basis of his observations in Russia from 1899 to 1922 the author describes the principal types of gummosis in trees and the characteristic bacterial, fungal and algal flora of each, including (1) the white gummosis of oaks, (2) the yellow and reddish-brown gummoses of elms, Hippocastanaceae, etc., (3) the white and colored gummoses of birches, and (4) the "Saftfluss" of oaks. There are 2 main types, namely, gummosis with a predominantly fungal and bacterial flora, and "Saftfluss" with an algal flora. Gummoses were found to offer a natural breeding place for several interesting yeasts (*Nadsonia fulvesceus*, *N. elongata*, *Saccharomyces paradoxus*, etc.), as well as acetic acid bacteria (*Bacterium xylinum*) and lactic acid bacteria (*Leuconostoc Lagerheimii*).—Old age and unfavorable environment were found predisposing to gummoses. The various saprophytic microorganisms lodged in wounds often cause a deep destruction of the underlying tissues. Not only such factors but also the individual architecture of the tree were found to be predisposing conditions. Forked branching with its accompanying fractures and tissue injuries favors gummosis. The author believes that such non-healing wounds followed by gummosis have been one of the indirect causes of the evolution of other more favorable types of branching.—*Frederick V. Rand*.

7409. NEWCOMER, E. J. Summer oil sprays. Proc. Washington State Hort. Assoc. 20: 93-97. 1924.—Sprays containing lubricating oil are preferable to fuel oil sprays. The constituents and methods of preparing several effective ones are given. Troubles encountered in the preparation and application of sprays are pointed out.—*Lillian C. Cash*.

7410. OHEIMB, FRITZ VON. Wurzeln als Baumwürger. [Roots as tree killers.] Mitteil. Deutsch. Dendrol. Ges. 32: 236-237. 1922.—An *Acer rufinerve pulverulentum* was planted at a distance of 6 m. from an old *Acer pseudoplatanus*. In 1919 a small twig of the former became yellow and in 1920 the entire plant died. It was found that a strong root of *A. pseudo-platanus* had entirely surrounded the other plant between the root and stem.—*J. C. Th. Uphof*.

7411. SHAW, F. J. F. The Imperial Mycological Conference. Agric. Jour. India 20: 1-7. 1924.

7412. SMITH, ERWIN F. An introduction to bacterial diseases of plants. xxx + 688 p. 453 fig. W. B. Saunders Co.: Philadelphia & London, 1920.—“While the book has been made primarily for laboratory use under the guidance of a competent teacher . . . it is believed that many persons not students may find in it things of interest, and partly with this wide public in view it has been illustrated very fully.—This book is the result of 35 years of reading and 25 years of diligent laboratory and field investigation. More than most books it is the product of experiment. . . . It is also largely the product of a single laboratory, that is to say, 8 of the 14 organisms here selected for special study were named by the writer (one with a colleague). . . . A majority of the photographs in the book were made by JAMES F. BREWER and the remainder by the writer. . . . The book was written at the earnest request of teachers and by their judgment it will stand or fall. It is the first treatise of its kind in the world and, therefore, I trust, that evidences of crudity will be excused.”—Part I is a conspectus of bacterial diseases of plants.—Part II deals with methods of research.—Part III comprises a synopsis of selected diseases, including cucumber wilt, black rot of crucifers, Stewart’s disease of maize, brown rot of Solanaceae, bacterial canker of tomato, Jones’ soft rot of carrot, etc., bacterial black rot of potato, bean blight, McCulloch’s cauliflower spot, angular leaf spot of cotton, mulberry blight, fire-blight of apple, pear, quince, etc., olive tubercle and crown gall.—Part IV is a miscellaneous section covering notes on additional diseases and subjects for special study, production of tumors in the absence of parasites, speculations on chemical and physical stimuli underlying tumor-formation, and production of teratosis in absence of tumors and of parasites.—In Part V, General observations, the author speaks intimately to the student through “Some observations that have grown out of my own experience.”—*Frederick V. Rand*.

7413. SMITH, RALPH E. Plant pathology in California. (Abstract.) Phytopathology 15: 126. 1925.

7414. YOTHERS, W. W., AND J. R. WATSON [WINSTON]. Mixing emulsified mineral lubricating oils with deep-well water and lime-sulphur solutions. Citrus Indust. 6: 6-7. 1925.—The mixing of emulsified lubricating oils with deep-well water and lime-sulphur solutions is discussed with special reference to the difficulties encountered and the value to citrus growers of the southeastern U. S. A. and the West Indies of having such a combination spray instead of resorting to separate applications of some form of sulphur for the control of rust mites and, at about the same time, an emulsion of lubricating oil for the control of white flies and scale insects. Experiments conducted by the writers during the past 6 years show that certain colloidal substances, such as casein, milk, skimmed-milk powder, gelatin, corn meal, wheat flour, corn starch, and laundry starch are equal to glue, the use of which was recently patented in California, as stabilizers in rendering oil emulsions miscible not only with deep-well waters but also with lime-sulphur solutions at various dilutions ranging from 1-10 to 1-1000. Methods and formulas for preparing such combination sprays are given. When the combination of oil emulsion and lime-sulphur solution is properly made it is said to be a reasonably safe spray for either citrus foliage or fruit, but, if applied to the trees without being made correctly, considerable injury may follow. The stabilized oil emulsions are said to have met with much favor among many of the largest citrus growers in Florida, who no longer find any difficulty in using the untreated water from deep-wells.—*Arthur S. Rhoads*.

PHARMACEUTICAL BOTANY AND PHARMACOGNOSY

HEBER W. YOUNGKEN, *Editor*E. N. GATHERCOAL, *Assistant Editor*

(See also in this issue Entries 6814, 6835, 6843, 6848, 6851, 6856, 6892, 6925, 7016, 7043, 7045, 7082, 7093, 7264)

7415. ANONYMOUS. *Halbfestes trockendes Öl in Brasilien*. [A half solid, drying oil in Brazil.] *Tropenpflanzer* 24: 152-153. 1921.—Recently a drying plant-fat has been found which starts melting at 21.5°C. and becomes entirely liquid at 65.9°C.; when melted it takes up oxygen rapidly. Cl. Grimme states that the supposed source, *Moquilea tomentosa*, should be *Pleurogyne umbrassima* (Rosaceae). Others state that it is yielded by *Couepia grandiflora*.—*J. C. Th. Uphof*.

7416. ANONYMOUS. *Salatöl aus Paranüssen*. [Salad oil from para nuts.] *Tropenpflanzer* 24:28. 1921.—For oil extraction only small seed are being used. The processes employed in obtaining the oil are described. Waste products are used as oil cakes or as fuel material.—*J. C. Th. Uphof*.

7417. ANONYMOUS. [Rev. of: DREWITT, F. DAWTREY. *The romance of the apothecaries' garden at Chelsea*. 2d ed. 136 p. 15 pl. Chapman and Dodd: London, Sydney, 1924 (see Bot. Absts. 13, Entry 1418).] *Nature* 115: 189. 1925.—This is a fascinating book and can be read again and again with pleasure and profit.—*O. A. Stevens*.

7418. ANONYMOUS. [Rev. of: RIGG, GEO. B. *The pharmacists botany*. xvii + 303 p. The Macmillan Co.: New York, 1924 (see Bot. Absts. 13, Entry 6922).] *Nature* 115: 296. 1925.—The reviewer finds the book unsatisfactory.—*O. A. Stevens*.

7419. BATTÀ, G. *Une plante médicinale brésilienne. Davilla rugosa*. [A Brazilian medicinal plant. *Davilla rugosa*.] *Archiv. Med. Belges* [Paris] 74: 15-20. 1921.

7420. BEILLE, GUILLAUME LUCIEN. *Precis de botanique pharmaceutique*. [Compend of pharmaceutical botany.] 2nd ed. rev. & Enlarged. *Illus. (col. pls.)* A. Maloine & Fils: Paris, 1925.

7421. CASTELLE, ARM. *Étude sur la composition chimique de l'Aristolochia Siphon*. [Chemical composition of *Aristolochia Siphon*.] *Jour. Pharm. Belgique* 4: 125-128, 141-143. 1922.

7422. GHOSH, M. N. *Oil-content of castor seeds as affected by climate and other conditions*. *Agric. Jour. India* 19: 81-84. 1924.—No appreciable effect on the oil-content could be attributed to climate, manurial treatment or to spacing. The oil-content of castor seed depends more upon the degree of maturity than on anything else.—*A. Howard*.

7423. GOPAL RAU, MADYAR, AND JOHN L. SIMONSEN. *Oil from the seeds of Salvia plebeia*. *Indian Forest Rec.* 10²: 23-26. 1923.—In the seed of *Salvia plebeia* found in the plains and lower elevations of India, the following acids are present as glycerides: stearic acid, oleic acid, linoleic acid and linolenic acid.—*E. N. Munns*.

7424. GRIEVE, MAUD. *Bulbs and tubers used in medicine and commerce, with mention of other portions of the plants also of economic value*. 6 + 118 p. Carrick: Tamworth, England, 1924.

7425. HANSEN, ALBERT A. *Nightshade poisoning in chickens and ducks*. *Jour. Amer. Vet. Med. Assoc.* 66: 502-503. 1925.—This is a report of the poisoning and death of 9 ducks and 6 chickens resulting from eating the fruit of *Solanum nigrum*.—*C. D. Marsh*.

7426. HANSEN, ALBERT A. *Two fatal cases of potato poisoning*. *Science* 61: 340-341. 1925.—The toxic principle of *Solanum tuberosum* L., solanin, is confined to green tissues. Reports of human poisoning are rare and details are given of the sickness of an Illinois family that used greened potatoes.—*C. J. Lyon*.

7427. IMPERIAL INSTITUTE, DIRECTOR. *Agathis resin of the Solomon Islands*. *Bull. Imp. Inst.* 22: 294-296. 1925.—An analysis of the resin of *Agathis macrophylla*, a tree related to the kauri pine of New Zealand.—*L. A. Kenoyer*.

7428. IMPERIAL INSTITUTE, DIRECTOR. *Dammar resin from Papua*. *Bull. Imp. Inst.* 22: 26-28. 1924.—A resin dug from the ground beneath trees belonging to species of *Vateria*

was sent to the Institute for analysis. It was decided that if the resin could be offered in a clean condition it might prove profitable for varnish-making.—*L. A. Kenoyer.*

7429. IMPERIAL INSTITUTE, DIRECTOR. **Dammar resin (damar penak) from the Federated Malay States.** Bull. Imp. Inst. 22: 28-31. 1924.—This resin is yielded by species of *Balanocarpus*. Tests of a number of samples indicate that the resin resembles the East Indian dammars of commerce. It would seem possible to establish a market for it in the United Kingdom.—*L. A. Kenoyer.*

7430. IMPERIAL INSTITUTE, DIRECTOR. **Datura metel from Montserrat.** Bull. Imp. Inst. 22: 134-136. 1924.—Comparative analyses of undeflowered and deflowered plants showed that the latter contain a much larger proportion of alkaloids, also that whereas the alkaloids consist largely of hyoscyamine in the former, they consist mainly or entirely of scopolamine in the latter.—*L. A. Kenoyer.*

7431. IMPERIAL INSTITUTE, DIRECTOR. **Essential oils from various parts of the Empire** Bull. Imp. Inst. 22: 265-280. 1924.—Analyses are given of rootstalks of vetiver (*Andropogon squarrosus*) from the Gold Coast and from the Federated Malay States, inchi grass (*Cymbopogon caesius*) oil from India, tsauri grass (*Cymbopogon giganteum*) from Nigeria, patchouli oil from Seychelles, cinnamon oil from Seychelles, thyme oil from Cyprus, leaves of *Ocimum gratissimum* from Seychelles, fruits of *Ocimum americanum* from South Africa, huon pine (*Dacrydium franklini*) oil from Tasmania and *Tagetes minuta* oil from South Africa.—*L. A. Kenoyer.*

7432. IMPERIAL INSTITUTE, DIRECTOR. **"Spruce gum" from Canada as a source of turpentine oil and resin.** Bull. Imp. Inst. 22: 31-33. 1924.—Results are given of the analysis of a sample of resin obtained in Saskatchewan, presumably from the white spruce.—*L. A. Kenoyer.*

7433. KANNGIESER, F. **Sind Ligusterbeeren für Wild giftig? [Are Ligustrum berries poisonous for wild animals?]** Mitteil. Deutsch. Dendrol. Ges. 33: 254. 1923.—The author cites a case where the berries of a *Ligustrum* were found in the stomach of a dead stag and suggests that these might have caused the fatality.—*J. C. Th. Uphof.*

7434. KEBLER, LYMAN F. [Editor]. **United States pharmacopoeial convention, Washington D. C., 1920.** 118 p. Bd. Trustees, U. S. Pharmacopoeial Convention: Washington, D. C., 1923.—This is an abstract of the proceedings of the last U. S. P. convention.—*H. W. Youngken.*

7435. KÜLZ. **Die Ergebnisse experimenteller Untersuchungen mit Asclepiadazeen-Drogen.** [Experimental facts on Asclepiadaceæ as drugs.] Tropenpflanzer 24: 187-189. 1921.—The bark of the South American *Gonolobus Condurango* and an unknown species of *Daemia* from Africa, both belonging to the *Asclepiadaceæ*, are separately used by the natives of both continents against the same disease.—*J. C. Th. Uphof.*

7436. PAMMEL, L. H. **Castor beans poisonous to ducks.** Vet. Med. 20: 23-24. 1925.—An examination of the alimentary canals of some dead ducks showed the presence of castor beans (*Ricinus*) and the owner said that they had had access to the beans. The author believes *Ricinus* to have been the cause of these fatalities.—*C. D. Marsh.*

7437. PAMMEL, L. H. **Horse nettle poisonous.** Vet. Med. 20: 154-155. 1925.—The author states that *Solanum carolinense* is poisonous and quotes a letter in which is described the case of an infant which was supposed to have been fatally poisoned by the fruit.—*C. D. Marsh.*

7438. PAMMEL, L. H. **Moldy oat hay.** Vet. Med. 20: 154. 1925.—In regard to some moldy hay which was supposed to have produced botulism, the mold was determined as a species of *Oidium* which would not have produced the untoward effects described.—*C. D. Marsh.*

7439. PAMMEL, L. H. **Poisonous blue-green algae.** Vet. Med. 20: 23. 1925.—J. C. Arthur, many years ago, reported supposed cases of poisoning by *Gleotricha pisum*. From Pammel's Manual is quoted a statement in regard to poisoning by *Nodularia spumigera*. A letter written by Geo. E. Sanders, Deloro, Ontario, states that 19 cattle and one sheep died from drinking water from Fraser Lake in which there was an abnormal quantity of *Anabaena circinalis*. A calf given some of the water died in 21 minutes and a dog eating the poisoned animals died.—*C. D. Marsh.*

7440. PAMMEL, L. H. **Pokeweed and horse gentian.** *Vet. Med.* 20: 100. 1925.—A correspondent reports the death of one cow and sickness of another from eating *Phytolacca decandra*. PAMMEL's *Manula* and CHESNUT are quoted in regard to the poisonous properties of this plant. Horse gentian, *Triosteum perfoliatum* is not very poisonous.—*C. D. Marsh.*

7441. PAMMEL, L. H. **Wormwood or wormseed.** *Vet. Med.* 20: 154. 1925.—The statement is made that wormwood or wormseed, *Chenopodium ambrosioides*, is a well known poisonous plant; a brief description is given of the symptoms produced.—*C. D. Marsh.*

7442. PARKER, RICHARD N., MADYAR GOPAL RAU, W. A. ROBERTSON, AND J. L. SIMONSEN. **The oil from the seeds of *Aleurites montana*.** *Indian Forest Rec.* 10²: 11-22. 1 pl. 1923.—The nature of the fats extracted from the seed of *Aleurites montana* is found to consist of glycerides of elaeostearic acid, linoleic acid and oleic acid. The range of the tree in China and in India is given.—*E. N. Munnns.*

7443. RIPERT, M. J. **Sur la culture en France du Black Mint de Mitcham.** [Culture in France of the black mint of Mitcham.] *Travaux de l'Office National des Matières premières végétales pour la Droguerie, la Pharmacie, la Distillerie et la Parfumerie* [Paris] Notice 17. 1-12. 1924.—Results are given of this culture of the black mint of Mitcham (a variety of *Mentha piperita*) under different French climatic conditions, with special reference to variations in analysis. So far as yield of essence was concerned, scattered cultures in arable land gave more satisfactory results than either thick or thin planting in cold, damp soil. The general conclusions from the investigation are that black mint from England, after 3 years adaptation in France, varies but little in yield of essence from that in England; and that dense planting in damp soil of cold regions, without excess humidity, gives the feeble content of essence characteristic of the Mitcham mint. Details of the culture and method of analysis are given.—*Frederick V. Rand.*

7444. RUSCHMANN, W. **Die Cohune- oder Corozon Nüsse Mittelamerikas.** [The cohune or corozo nut of Central America.] *Tropenpflanzer* 24: 147-148. 1921.—The nuts of the corozo palms yield an oil of which little is known. Before the war some appeared on the English markets. It is produced on a small scale. The distribution of the palm is large, beginning back of the sandy coastal strip of the east coast of Central America. Palms do not occur on poor, dry soils; they require much light and air and are therefore not found in dense, dark forests.—*J. C. Th. Uphof.*

7445. SABALITSCHKA, THEODOR. **Anleitung zum chemischen nachweis der gifte fur pharmazeuten, chemiker und mediziner.** [Guide to the chemical identification of poisons for pharmacists, chemists and physicians.] vi + 123 p. *Illus.* Urban and Schwarzenberg: Berlin, 1923.

7446. SEDDON, H. R., AND H. R. CRANE. **Poisoning of stock by *Solanum sturtianum*.** *Agric. Gaz. New South Wales* 36: 192-194. 1925.—Experimental results show that this native plant, which seems to have a somewhat local distribution, is toxic to sheep and cattle. Evidently toxic conditions were produced mainly by the fruit. Animals pastured continuously where the plant grows were not found to suffer, but loss occurred in herds or flocks driven through the region. The inception of toxic symptoms are not noticeable until a day or so after eating the plant.—*L. R. Waldron.*

7447. SIMONSEN, JOHN LIONEL. **Constituents of some Indian essential oils: Part 13. The essential oil from a new species of *Andropogon* occurring in the Etawah District, U.P.** *Indian Forest Rec.* 10³: 153-165. 1924.—The flower heads of *A. Jwarancusa* yield an oil which at first was thought to be of economic interest. It proved otherwise, the terpenes and sesquiterpenes present being of little present-day value.—*E. N. Munnns.*

7448. SPANN, ALEXANDER **Ueber einige seltener pflanzliche Fette und Öle der Japaner.** [Some rare vegetable fats and oils of the Japanese.] *Tropenpflanzer* 24: 161-169. 1921.—*Perilla ocymoides* is grown in Corea as well as in Japan. Japan obtains much of the seed from China and Corea. Seed are sown broad-cast in seed beds. Toward the end of July, when the plants are 10 cm. high, they are planted in the field about 30 cm. apart. Seed are harvested the last of October. The leaves contain a volatile oil which keeps mosquitos away. *Aleurites cordata* produces a wood-oil which dries quickly and is used for filling pores of wood before painting. Of most value is the cold pressed oil. Seed of *Camellia japonica* contain 40% of

a light yellow oil which is manufactured in China. The seed are dried in the sun and the oil is obtained by primitive processes. In Japan it is employed as a hair-oil, and also for machinery, watches and arms. The seed of *Camellia sasanqua*, which grows wild in the warm sub-tropical part of Japan, contain 58-59% of oil. Seed of *Cinnamomum Camphora* produce kusu-oil, which should not, however, be confused with camphor oil. Fruit of *Machulus Thunbergii* contain 65% of oil which, when extracted, is yellowish brown. *Lindera sericea* also produces a volatile oil. Of much importance are the oils derived from *Torreya nucifera* and *Cephalotaxus drupacea*.—*J. C. Th. Uphof*.

PHYSIOLOGY

B. M. DUGGAR, *Editor*

W. J. ROBBINS, *Assistant Editor*

(See also in this issue Entries 6876, 6877, 6954, 6991, 6992, 7031, 7040, 7119, 7144, 7230, 7232, 7234, 7269, 7300, 7301, 7304, 7525, 7527)

GENERAL

7449. INAMDAR, R. S. The auto-regulation of physiological processes in plants. (Presidential address, Bot. Sect. 12th Indian Sci. Congress, Benares.) 35 p. Baptist Mission Calcutta, [1925?].—The facts are that the physiological reactions being in nature complex, their activity is conditioned by opposing forces which regulate their rates mutually. . . . The speculations are that, as a necessary consequence of this physical-chemical regulation, the living organization tends to maintain a specific maximum totality of results during physiologically equivalent periods, which it is not possible to exceed on account of its constructional limitation. This has been verified experimentally at least in 1 physiological process. Finally, growth may be conceived as an integrated summation of all the metabolic activities, and the purpose of all this regulation appears to be to produce a total maximum growth during equivalent times in the life-history of the organisms. . . . The antecedents in our subject are a definite set of 'precursors' of physical-chemical reactions responsible for different physiological activities. . . . It is the peculiar organisation of these different 'precursors' which leads to a coördinated set of functions in life, giving us the concept of the living organism. Our future inquiry must, therefore, be directed not merely to isolate analytically the individual reactions and their 'antecedents' but also to synthesize the significance of each on the life of the whole. . . . It is only when . . . we begin to look at the whole cycle of life as a system of varying physical-chemical reactions of all kinds that it will be possible for us to study the energy relationships of not merely one reaction but of the whole system. . . . Adaptation appears to be the main feature of the living organization because of the very coördination of physical-chemical forces of which we have been speaking, and which must produce a definite result when subjected to certain conditions. . . . What appears to be fundamental in biology is the recognition of Mendelian units, the atoms of the living; yet the molecular compound, the composite species, seems to have a definite meaning in that it represents a coördinated organization of these units such that the individual will at least not be weeded out in the natural struggle for existence. The problem of the origin of species in this sense is not merely an inquiry into the nature of the atoms, the 'precursors' of physical-chemical forces, and their possible variations by a process of transmutation, but also, and probably mainly, their organization to give a coördinated set of functions.—*From author's summary.*

7450. WELLS, H. GIDEON. The chemical aspects of immunity. 254 p. Chemical Catalog Co., Inc.: New York, 1925.—This monograph was published through the cooperation of the American Chemical Society and the National Research Council.—"Originally the reactions of immunity were studied with the purpose of solving urgent problems concerning the cure, diagnosis and prevention of disease. . . . In course of time however, it began to be appreciated more and more that these reactions of immunity are important, not merely for their application to medical practice, but as general biological phenomena and as processes of

biological and colloidal chemistry. . . . The progress towards an understanding of the fundamental principles has been slow, because in the study of the immunological processes we must have on one side of the equation a living animal and on the other the most complex of all known chemical compounds, the proteins or closely related colloidal materials."—After an introductory chapter the following phases of the subject are comprehensively discussed: Antigens, immunological specificity, nature of the antibodies, neutralization of toxin by antitoxin, agglutination and precipitation reactions, the lytic reactions (bacteriolysis, cytolysis, amboceptor-complement reactions), the Wassermann reaction and related reactions with syphilitic blood, hyper-sensitiveness—anaphylaxis—allergy, phagocytic immunity, resistance to non-antigenic poisons.—Literature references appear at the end of each chapter.—*Frederick V. Rand.*

PROTOPLASM, MOTILITY

7451. CHOLODNY, N. Über Protoplasmaveränderungen bei Plasmolyse. [Protoplasmic changes during plasmolysis.] *Biochem. Zeitschr.* 147: 22-29. 1 fig. 1924.—Non-electrolytes withdrew water from the protoplasm and thickened it; electrolytes increased its viscosity through the action of the cation on the negatively charged disperse phase. Polyvalent anions inhibited this cation action in some cases. Considerable difference in the protoplasmic viscosity of various plants was observed, that of land plants being highest and that of aquatics lowest. Under ordinary circumstances the plasma viscosity is probably constant. *H. D. Hooker, Jr.*

DIFFUSION, PERMEABILITY, PHYSICO-CHEMICAL RELATIONS

7452. BROOKS, S. C. The effect of light on the permeability of lecithin. *Science* 61: 214-215. 1925.—In a paper by BECKING AND GREGERSEN (*Proc. Soc. Exp. Biol. Med.* 22: 130-133. 1924. See *Bot. Absts.* 14, Entry 3890.) under the title above given, those authors reached the conclusion that permeability increased in light and showed that equilibrium was attained on the 2 sides of the membrane while there was still a difference in concentration between the solutions separated by the membrane. This showed that other factors must be concerned, but a more serious fault lay in the fact that the conductance of the more dilute solution into which the salt (KCl) was supposed to diffuse, increased only during the period of illumination. This could be explained only by a reversal of the direction of diffusion, unless the possible temperature fluctuations, which would increase the conductivity by nearly $\frac{2}{3}$ of the largest increase in conductance noted, were sufficient to account for the changes observed.—*C. J. Lyon.*

7453. CHODAT, FERNAND. Contribution au Problème des Perméabilités cellulaires. I. Étude du gonflement de la gélatine sous l'influence de l'urée. [Cellular permeability. I. The swelling of gelatin under the influence of urea.] *Bull. Soc. Chim. Biol.* 7: 113-123. 1925.—The general results on the swelling of gelatin in acids are in agreement with those of Loeb. In such a weak acid as acetic the anomalous course of the swelling in different concentrations is explained by the fact that acetic acid is feebly dissociated, while the acetate formed with gelatin is strongly dissociated. Consequently, the curve of swelling does not show a maximum at the isoelectric point. Gelatin swells more rapidly in solutions of urea of 2-8% concentration than in water, because of the reduction of surface tension which urea produces. The effect of urea upon swelling is consequently independent of the sign of the charge upon the gelatin.—*Joseph S. Caldwell.*

7454. HEILBRUNN, L. V. The electrical charges of living cells. *Science* 61: 236-237. 1925.—The presence of a positive charge in the interior of cells and a negative charge on the surface has been demonstrated by the increase in fluidity of the internal protoplasm. Ca or Mg ions make the interior more fluid than do monovalent ions, and the trivalent ions, Al and Ce, are still more active.—From day to day there is a decided variation in the behavior of sea urchin eggs in the experiments reported. The greatest difference lies in the amount of surface charge and is believed to be due to the variation in rate of diffusion of HCO_3 and CO_3 ions from the surface, which would then be taken as the explanation for the differences in electrical charges in the 2 parts of the living cell.—*C. J. Lyon.*

7455. METZNER, P. Zur Kenntnis der photodynamischen Erscheinungen. III. Über die Bindung der Wirksamen Farbstoffe in der Zelle. [Photodynamic phenomena. The combination of active dyes in the cell.] *Biochem. Zeitschr.* 148: 498-522. 3 fig. 1924.—All photodynamically active dyes investigated induce negative phototactic reactions, seldom positive reactions. Induced photokinesis has been observed with "cresylechtviolet." The active part of the dye enters into a more or less reversible combination in the plasma membrane and has a distinct spectrum. Both absorption and fluorescence spectra are displaced more or less toward the red end of the spectrum, depending on the dye. Their peculiarities indicate combination of the dye with phosphatids and perhaps with tyrosin or tyrosin-containing proteins also. The activity spectrum is also displaced toward the red. The activity and absorption spectra run parallel, but do not coincide. The activity spectrum is displaced further toward the red. A bibliography is appended.—*H. D. Hooker.*

WATER RELATIONS

7456. RIGG, G. B. Some physiology of the sieve tubes of *Nereocystis*. *Publ. Puget Sound Biol. Sta.* 3: 311-325. *Pl.* 37-38, 1 fig. 1925.—The general structure of the plant suggests that the sieve tubes conduct foods as they do in vascular cryptogams. Macrochemical tests of the water extracts of the tubes indicate the presence of proteins. Microchemical tests show the presence of proteins, and indicate that the proteins are in the protoplasm. It seems probable that material is transferred from the older to the younger sieve tubes through connecting branches. It is considered improbable that carbohydrates are conducted in the sieve tubes in any considerable amount. Apparently the callus masses near the plate in the older tubes arise from the protoplasm and are correlative with increasing age and with loss of function of the sieve tubes.—*T. C. Frye.*

7457. WETZEL, KARL. Die Wasseraufnahme der höheren Pflanzen gemässiger Klimate durch oberirdische Organe. [The absorption of water by aerial organs of the higher plants of temperate climates.] *Flora* 117: 221-269. 1924.—In determining the ability of plants to absorb water by aerial organs the following method was used: Leaves were removed from plants and the cut surfaces sealed; they were weighed and allowed to wilt; the water loss was determined; they were immersed in distilled water for 12-24 hours and weighed again. Many leaves absorb water through the surface if immersed 12 hours or longer. The cuticle of many plants offers no effective hindrance, but a felt of hairs hinders the entrance of water. It was found that 64% of mesophytes reached the original state of turgescence. In *Tillandsia* spp. the original weight was surpassed. Permeability of the cuticle and ability of the cuticle to be wetted are necessary for the absorption of water. In experiments with leaves of *Fagopyrum tartaricum* the lower surfaces absorbed more rapidly than the upper, but there is no indication of absorption through the stomata. Experiments with *Salvia argentea* indicate that absorption by hairs of the leaf is without significance for the water-need of the plant. When leaves of *Pisum sativum* and other plants were partly immersed the absorption and conduction were too slow to make up the turgor-deficit and the exposed part wilted at room temperature. Experiments conducted in the open on rosette plants and plants with a felt of hairs indicate that absorption by aerial organs is without significance in temperate climates. Water-absorption by wilted leaves is a widely distributed phenomenon whose biological significance cannot yet be estimated.—*Anna M. Starr.*

MINERAL NUTRIENTS, SALT RELATIONS

7458. MIYAKE, KOJI, AND MASASHI ADACHI. On the influence of three manurial ingredients upon the hydrogen-ion concentration of the cell sap of oats and flax. *Jour. Biochem. Tokyo* 4: 317-321. 1924.—Oats (White Belgium) and flax (Belgium) were used, and 5 plots of each were employed. In each case, plot 1 received no fertilizer, plot 2 phosphoric acid and potash but no nitrogen, plot 3 potash and nitrogen but no phosphoric acid, plot 4 phosphoric acid and nitrogen but no potash, plot 5 a complete fertilizer (ammonium sulphate, superphosphate, and potassium sulphate) at the rate of 3.75 kgm. each per 0.991 sq. m. The oats were sampled 47 days after sowing and at intervals of 3-12 days thereafter, 9 times in all. Flax was sampled 46 days after sowing and 3 additional samples were taken at 6-10

day intervals thereafter. The H-ion concentration of the expressed and centrifuged sap was determined electrometrically. At the 1st sampling the H-ion concentration was lowest for the plot receiving a complete (NKP) fertilizer ($\text{pH} = 6.49$). In the NK plot it was 6.42, in the NP plot 6.29, and in the KP and unmanured plots 5.84 and 5.85 respectively. The differences progressively decreased as growth went on; at the last sampling the NK plot was lowest, $\text{pH} = 5.70$, the others ranging in the order NP 5.66, KP 5.64, NKP 5.63, and unmanured 5.57. The change during the growth period was least in the KP plot, slightly greater in the unmanured, and greatest in the NKP plot. NK showed somewhat less change than NKP, and NP less than NK. The results with flax were of the same general character. Phosphoric acid and potash tend to raise the H-ion concentration of the sap while nitrogen tends to lower it.—*Joseph S. Caldwell.*

PHOTOSYNTHESIS

7459. ANONYMOUS. [Rev. of: BOSE, JAGADIS CHUNDER. *The physiology of photosynthesis*. xx + 287 p. Longmans Green & Co.: London, 1924.] *Nature* 115: 44. 1925.—The methods used probably will be of the most interest. (See also Bot. Absts. 14, Entry 2962.)—*O. A. Stevens.*

7460. MAINX, F. [Rev. of: STEINECKE, FR. *Über Beziehungen zwischen Färbung und Assimilation bei einigen Süßwasseralgen*. (Relation between coloration and assimilation in several freshwater algae.) *Mez, Bot. Archiv* 4: 317–327. 1923 (see Bot. Absts. 14, Entry 3811).] *Arch. Protistenk.* 50: 275–276. 1925.

7461. SCHROEDER, H. *Die Kohlendioxydversorgung der Chloroplasten*. [The carbon dioxide supply of the chloroplasts.] *Flora* 117: 270–292. 1924.—In this 1st report of his work Schroeder has used the rate of diffusion of CO_2 in the air phase (intercellular spaces) and in the hydrophase (cell walls, chloroplasts) to deduce formulae to express the CO_2 concentration at any given chloroplast. He has made measurements in both the spongy and palisade regions of the ivy leaf to get the relative value of these 2 phases in determining the concentration at any point. Since the CO_2 concentration decreases from the lower to the upper surface of the leaf, and the light intensity decreases from the upper to the lower, the CO_2 concentration may be a limiting factor in photosynthesis in the palisade at a time when the light intensity is a limiting factor in the spongy tissue. The ratio between the CO_2 concentration in the spongy tissue and in the palisade is probably greater in the ivy leaf than in a leaf with larger air spaces and thinner cell walls.—*A. G. Stokey.*

7462. STILES, WALTER. *Carbon assimilation*. *Sci. Prog.* 19: 392–397. 1925.—A number of recent papers on photosynthesis are cited and reviewed. These cover a range of topics, such as the effect of high temperatures, poisons, and wound stimuli on photosynthetic activity; ratio of CO_2 to O_2 , efficiency of the process; products; and relation of light wave-length to photosynthetic rate. They include the work of Johansson, Wurmser and Jacquot, Warburg, Fromageot, Kostytschew, Melchior, Weevers, Warburg, and Negelein, and Harder.—*L. A. Kenoyer.*

METABOLISM (GENERAL)

7463. ANONYMOUS. [A new process for making levulose.] *South African Sugar Jour.* 9: 72. 1925.—A new process for making levulose, which is 50% sweeter than ordinary sucrose, has been worked out by Frederick Bates, sugar laboratory, U. S. A. Bureau of Standards. The process is said to have commercial possibilities.—*Nellie E. Fealy.*

7464. ANONYMOUS. [Chemical control results for the 1923–24 cane crop of Cuba and Java.] *Internat. Sugar Jour.* 27: 13. 1925.—A recent comparison of the chemical control results reported for Cuba and Java for the cane crop of 1923–1924 showed the average percentage composition to be as follows (that for Cuba being given first in each instance): Sucrose in cane, 13.20 and 13.06; purity of the normal juice, 83.48, 84.60; purity of the final molasses, 32.80, 31.30; sucrose recovery, per cent of sucrose in the juice, 91.31, 90.71; sucrose lost, per cent of sucrose in the cane, 2.01 and 2.14.—*Nellie E. Fealy.*

7465. BATHAM, H. N., AND L. S. NIGAM. *Tamarind as a source of alcohol and tartaric acid*. *Agric. Res. Inst. Pusa Bull.* 153: 1–8. *Pl.* 1–2. 1924.—The tamarind (*Tamarindus indica*),

grown widely in India, produces pods which yield 32–68% hexose sugars and 9–15% tartaric acid. When tamarind pulp extracts were fermented by organisms naturally present, the yield of alcohol was low compared to the yield obtained when pure cultures of *Saccharomyces ellipsoides* and *S. exiguus* were used. The authors conclude that if fermentation of the tamarind pulp is carried on commercially with pure cultures of yeast in place of organisms naturally present, the yield of alcohol will be increased. Besides alcohol, a certain quantity of tartaric acid can be extracted from the fruit of the tamarind. If the sugar, which is the predominant constituent of the pulp, is first converted into alcohol, the manufacture of tartaric acid from the residue can be placed on a sound commercial basis, the authors state.—*H. M. Jennison.*

7466. BELVAL, H. *La genèse de l'amidon dans les céréales.* [Formation of starch in the cereals.] *Rev. Gén. Bot.* 36: 308–324, 327–356, 393–411. 1924.—A brief account is first given of the usual process of carbohydrate synthesis and transport in cereals. If wheat or maize is examined, carbohydrates other than cane sugar and its hydrolytic products are never found in the green parenchyma of the leaves. Starch is always absent. Divergences occur in the nature of the soluble carbohydrate reserves which accumulate transitorily in the stalk, while awaiting their utilization by the ear. In this regard, the indigenous cereals may be classed in 2 groups: 1, of which maize is the type, comprises the plants which form only saccharose, glucose, and fructose, that is to say, in nearly the same proportions as in the leaves; the other group, of which wheat is the type, is characterized by the presence of levulosans; in this last category, apparently there are included, rye, barley and oats besides the various species of *Triticum*. This difference of type is manifest at the level of the leaf sheath which in the case of grasses is to be considered from the physiological point of view as being part of the stem; but in maize the reducing sugars formed by the inversion of cane sugar elaborated by the blades always predominate; in the wheat, aside from the preceding sugars, levorotatory polyoses with a levulose base are constantly found.—The contrast is more marked in the grain. In maize the soluble carbohydrate reserve which accompanies the starch in all states of development is composed of saccharose and reducing sugars, the latter being particularly abundant immediately after fertilization. The wheat grain, on the contrary, always contains some levulosans, of which the proportion in the very young grain may be as high as 35% of the dry weight when the proportion of starch is not more than 15%.—Levosin, isolated and described by Tanret, represents the major part of the levulosans, with the exclusion of all that have been named levulin and synanthrose. Secalose, found in the stems of rye by Schulze and Francfurt, is probably levosin more or less mixed with crystallizable sugar.—It would be wrong to exaggerate the role of levulosans in the elaboration of the amylaceous material of the grain and even to think that the reducing sugars are only able to be converted into starch by previous transformation into levosin. However, the levorotatory polyoses of the grain represent only a minimum fraction of the starchy reserve which occurs at the time of harvest; it should be considered chiefly as a transitory reserve, of unique importance in the young grain. It is, in fact, a means of defense against the elevation of osmotic pressure at a time when, the amylogenic mechanism being too little developed, the grain is powerless to condense immediately the hexoses which accrue from the stem.—Whichever class of the cereals is used, no trace of dextrins is found in any part of the plant. What has been considered dextrins is cane sugar or a mixture of saccharose and levulosans. On this point the views of Dehéraïn and Müntz are confirmed; those of Peligot, de Payen, and de Hébert are opposed. It is entirely illusory to formulate the processes of synthesis on the basis of the hydrolytic phenomena; accordingly it is inadvisable to imagine that when glucose is condensed to starch, in the plant, there must occur the various steps through maltose and dextrin.—*J. C. Gilman.*

7467. BRAECKE, MARIE. *Variations dans la composition du Rhinanthus Crista-Galli L, du Melampyrum arvense L, et du Melampyrum pratense L, au cours de la végétation d'une année.* [Variations in the composition of *Rhinanthus Cristagalli*, *Melampyrum arvense*, and *M. pratense*, in the course of a season's growth. *Bull. Soc. Chim. Biol.* 7: 155–166. 1925. —Bourquelot's biochemical method of analysis was applied to each of the 3 plants at intervals of 3–4 weeks throughout the period of growth. Saccharose is present only in very small

amounts in all stages of development in the vegetative parts, it is replaced in *Rhinanthus Christa-galli* by mannite, in *Melampyrum arvense* and *M. pratense* by dulcite or melampyrite. The amount of the glucoside, aucubine, present is largest in relation to dry weight in the young plants and decreases with age, increasing temporarily again at flowering. It is transported to the seed and forms the chief foodstuff accumulated in them, with saccharose 2nd in amount. Aucubine is constantly present in all stages of development in all members of the Scrophulariaceae thus far examined. (See also Bot. Absts. 13, Entries 2955, 2958, 2959.)—*Joseph S. Caldwell.*

7468. BRIDEL, MARC. Sur la présence de très fortes quantités de maltose libre dans les tubercules frais de l'*Umbilicus pendulinus* D C. [Free maltose in the fresh tubercles of *Umbilicus pendulinus*.] Bull. Soc. Chim. Biol. 7: 181-187. 1925.—In the tubercles collected at the end of the growing season, maltose in the free state is present in amounts approximating 4% of the fresh weight. It was prepared from the alcoholic extract in pure crystalline form.—*Joseph S. Caldwell.*

7469. CHOWDHURY, J. K. Über Äther von Polysacchariden mit Oxysäuren. [Ethers of polysaccharides with oxyacids.] Biochem. Zeitschr. 148: 76-97. 1924.—In the presence of an excess of concentrated NaOH at room temperature, polysaccharides formed water-soluble esters with glycolic acid. The cellulose ester of lowest acid content had 1 acid group for every 3 glucose units; that of highest acid content had 3 acid groups for each glucose. The starch ester of maximum acid content had 2 acid groups, and inulin had $2\frac{1}{2}$ per hexose. Compounds with high acid content formed insoluble salts with earth alkali salts and those with low acid content formed soluble salts. The esters were either free acids or lactones, the former being insoluble in water and organic solvents. Methylation gave a mixed methyl glycolic acid, ether of cellulose with the acid groups partly methylated. This was soluble in cold water and insoluble in hot. The carboxyl group of the corresponding starch ether was not methylated, the ether being soluble in both hot and cold water. A lactic acid ether of cellulose was made by the action of chloropropionic acid on soda pulp. Cellulose and glycolic acid were obtained from their ethers by phosphorus iodide and water.—*H. D. Hooker.*

7470. COLIN, HENRI. La genèse des levulosanes chez les végétaux. [Genesis of levulosans in plants.] Bull. Soc. Chim. Biol. 7: 173-180. 1925.—The occurrence and common properties of the levulosans, inulin, levosin, graminine, scilline, and irisine are summarized. Their distribution in the plants in which they occur is peculiar. In the Compositae they are absent from the seed and are accumulated chiefly in the subterranean parts. In the Gramineae they are found in the seed, if at all, only in the very early stages of development. In both groups they are present throughout the stem and roots. Nothing is yet known as to the nature of the mechanism by which dextrose and ordinary levulose (butylene oxide) are converted into levulosans, which yield γ -fructose (ethylene oxide), since it has thus far proved impossible to isolate enzymes which will effect these transformations *in vitro*.—*Joseph S. Caldwell.*

7471. DAVIS, D. E., AND J. R. BEACH. A study of the relative values of certain succulent feeds and alfalfa meal as sources of vitamin A for poultry. California Agric. Exp. Sta. Bull. 384. 3-14. 1925.—All of the varieties of field-grown greens used are good sources of vitamin A for poultry. Carrots appear to be equal in value to the field grown greens and, therefore, should make satisfactory substitutes for them. If sprouted barley is used as the entire source of vitamin A for poultry, the amount fed should be in excess of 20% of the total ration. If alfalfa meal is used as the entire source of vitamin A for poultry, the amount fed should be in excess of 10% of the total ration. Mangel beets appear to be valueless as a source of vitamin A for poultry. Attention is called to the utilization of cod-liver oil as an emergency source of vitamin A when no greens can be obtained. The incorporation of at least 2% of this oil in the mash will, in all probability, prevent any loss due to vitamin A deficiency. The use of yellow corn as the grain ration will also be effective for this purpose.—*A. R. C. Haas.*

7472. GEREMICCA, FEDERICO. Sulla materia colorante del frutto dell'arancio. Nota preliminare. [Preliminary note on the coloring matter of orange fruit.] Boll. Soc. Nat. Napoli 33 (Ser. 2, 13): 50-52. 1920 [1921].—This preliminary report describes the method of extract-

ing the coloring matter from orange peel, its solubility in various solutions, and its reactions to different chemical substances.—*Edith K. Cash.*

7473. HÄGGLUND, E., UND C. B. BJORKMAN. *Untersuchungen über das Salzsäure-Lignin.* [Investigations on lignin hydrochloride.] *Biochem. Zeitschr.* 147: 70-89. 1924.—Lignin hydrochloride, obtained as a residue after treating pine wood with concentrated HCl at low temperature, was partly dissolved by further treatment with HCl. The sugars obtained by hydrolysis were in part fermentable. The residue was arabinose. Methylpentoses were not found. Furfural distillation yielded alcohol-soluble and alcohol-insoluble phloroglucides. The solution of the carbohydratelignin compound was characterized by a green color. Oxalic acid was obtained by alkali fusion and succinic acid by oxidation with hydrogen peroxide.—*H. D. Hooker, Jr.*

7474. HAMMARSTEN, H. *Untersuchungen einiger hochmolekularer Elektrolyte mit Hinsicht auf ihre Bedeutung in der Zelle.* [Electrolytes of high molecular weight and their significance in the cell.] *Biochem. Zeitschr.* 147: 481-545. 18 fig. 1924.—Disodium guanilate dissociated normally and a migration velocity of 48.3 was found for the guanilate ion. The osmotic pressure of guanylic acid and the disodium salt corresponded to the theoretical value within the limits of error. The osmotic pressure of the disodium salt was greatly reduced by neutral salts. Ampholytes combined with guanylic acid only when one or the other was in great excess. Basic amino-acids and proteins formed salts with guanylic acid from which neutral salts were completely removed by dialysis. Histone and guanylic acid formed a soluble compound only in acid solution. Glycocholic acid was found to have a low dissociation constant; taurocholic acid, a high one. The osmotic pressure of electrolytes of high molecular weight was influenced by molecular volume as well as by degree of dissociation, aggregation, and by interionic forces. In consequence, the osmotic pressures of various salts of glycocholic and taurocholic acid, of histone and protamine was less than would be expected from the van't Hoff-Arrhenius or the Bjerrum-Detyes theories. The abnormality of the osmotic pressure increased with the difference between the ionic volumes and was a function of their ratio. The biological significance of these relations is indicated.—*H. D. Hooker, Jr.*

7475. KNIGHT, R. C. *The carbohydrate-nitrogen ratio.* *Sci. Prog.* 19: 34-42. 1924.—This is a review of recent work by several American physiologists (Kraus and Kraybill, Woo, Gurjar, Hooker, Harvey and Murneek, Gardner, Garner and Allard, Nightingale) showing that there is a ratio of carbohydrate to nitrogen which secures optimum fruiting in a given plant. Excess of nitrogen produces much vegetative growth and little fruit, while deficiency of nitrogen produces little vegetative growth and little fruit.—*L. A. Kenoyer.*

7476. LAMPE, LOIS, AND MARION T. MEYERS. *Carbohydrate storage in the endosperm of sweet corn.* *Science* 61: 290-291. 1925.—Carbohydrate storage in the immature endosperm of sweet and waxy sweet corn is partly in the form of globules of cytoplasmic origin. When large, these globules contain small grains of carbohydrate, starch in sweet corn, and dextrin in waxy sweet corn. The liquid part of the globule is a dextrin that is nearer to sugar; this part is surrounded by a thin membrane of unknown constitution. The genetic complex of the kernel determines the kind of carbohydrate stored and the form taken in storage.—*C. J. Lyon.*

7477. MAMELI-CALVINO, E. *Commenti ad alcuni recenti lavori sulla biochimica dei Licheni.* [Comments on recent work on the biochemistry of lichens.] *Bull. Soc. Bot. Italiana* 1925: 10-17. 1925.—This discussion is largely a criticism of papers by CENGIA-SAMBO, in the light of the author's own work on the subject. She claims to have established the presence of starch in lichens, and that oil is not the first product of photosynthesis by the algal component, differing with Cengia-Sambo in both these points. Starch is reported to vary decidedly with the seasons, to disappear in long periods of darkness, and not to be confined to the interior of the algal cells. The work of F. Tobler is cited to support the author's claims, except as to the presence of starch in lichens outside of the green cells.—*J. B. Rhine.*

7478. PIERANTONI, UMBERTO. *A proposito delle teorie sulla luminescenza batterica e sulle simbiosi fisiologiche.* [The theory of bacterial luminescence and physiological symbiosis.] *Boll. Soc. Nat. Napoli* 32 (Ser. 2, 12): 43-46. 1919 [1920].—In answer to a criticism made by

Dubois (Compt. Rend. Soc. Biol. Paris 82: 476. 1919), the author cites proofs of the bacterial nature of luminescence in various animals, obtained both from his own studies and those of Zirpolo.—*Edith K. Cash.*

7479. ROSENTHALER, L. Einige Beobachtungen an Kirschchlorbeerblättern. [Observations on cherry laurel leaves.] Mitteil. Naturf. Ges. Bern 1924: LV-LVI. 1925.—The dry matter of the leaves increased during the day and diminished at night. Young leaves contain less dry matter than old ones.—*S. Blumer (translated).*

7480. SABALITSCHKA, T. Über die Ernährung von Pflanzen mit Aldehyden. V. Einfluss des Formaldehyds auf die Function pflanzlicher Enzyme. [Aldehyde nutrition of plants. Effect of formaldehyde on the action of plant enzymes.] Biochem. Zeitschr. 148: 370-382. 1924.—Germination of seed was delayed or stopped by 0.13% formaldehyde. Shoots for forcing were not affected by 4% formaldehyde, except that growth was retarded. Glucose fermentation by living yeast was stopped by 3% formaldehyde, and retarded by concentrations between 0.3 and 0.005%. These findings are thought to show that the stimulation of enzymes was not a factor in the formation of carbohydrates in plants exposed to formaldehyde gas in the absence of light and CO₂.—*H. D. Hooker.*

7481. THOMAS, PIERRE. Nouvelle réaction des pentoses libres ou combinés. [A new reaction of free or combined pentoses.] Bull. Soc. Chim. Biol. 7: 102-112. 1925.—When an aqueous solution of arabinose or xylose or a pentose-containing compound as gum arabic, cherry gum, or yeast nucleic acid, is cautiously added to a solution of 0.3 gm. beta-naphthol in 100 cc. concentrated H₂SO₄ so as to avoid mixing, a pure, deep seablue ring appears at the junction and the H₂SO₄ is also colored blue. The colors obtained with a large number of other compounds of aldehydic or ketonic structure are described, none of which may be confused with that yielded by pentose. It is probable that arabinose or xylose combines with betanaphthol to form a blue condensation product soluble in concentrated H₂SO₄.—*Joseph S. Caldwell.*

7482. W., G. W. M. The chemistry of flour milling. [Rev. of: KENT-JONES, D. W. Modern cereal chemistry. ix + 234 p. The Northern Publ. Co.: Liverpool, 1924.] Nature 115: 222. 1925.

7483. ZIRPOLO, GIUSEPPE. Studi sulla bioluminescenza batterica. Azione dei sali di magnesio. [Action of magnesium salts on bacterial bioluminescence.] Boll. Soc. Nat. Napoli 32 (Ser. 2, 12): 112-119. 1919 [1920].—Results of experiments with various Mg salts on *Bacillus pierantonii* Zirpolo show that, with the exception of salicilate of magnesium, they tend to increase both the intensity and duration of luminescence.—*Edith K. Cash.*

7484. ZIRPOLO, GIUSEPPE. Studi sulla bioluminescenza batterica. 3. Azione dei raggi emanati dal bromuro di radio. [Bacterial luminescence. 3. Action of radium rays.] Boll. Soc. Nat. Napoli 33 (Ser. 2, 13): 75-81. 1920 [1922].—Cultures of *Bacillus pierantonii* showed a greater intensity and lengthened duration of luminosity when subjected to emanations from radium.—*Edith K. Cash.*

METABOLISM (NITROGEN RELATIONS)

7485. ADLER, O. Darstellung schwefelhaltiger Melanine. [The formation of sulphur-containing melanins.] Biochem. Zeitschr. 148: 541-547. 1924.—Tyrosin sulpho-melanin acid was prepared and converted to tyrosin sulpho-melanin. Thiophene melanin acid was prepared and converted to thiophene melanin.—*H. D. Hooker.*

7486. HANCE, F. E. Inhibition of bumping in the determination of nitrogen in soil. Jour. Amer. Soc. Agron. 16: 790-792. 1924.—Bumping may be prevented by placing an asbestos collar between the flame and the distilling flask. The addition of 2 gm. of zinc dust also is used. Only 2.8 gm. of soil are used in the determination as described.—*F. M. Schertz.*

7487. HORNE-MANN, CURT. Ueber den Einfluss der Phosphatdüngung auf die Bildung von Vitamin "B" in der Pflanze. [The influence of phosphate upon the formation of Vitamin "B" in plants.] Zeitschr. Pflanzenernähr. u. Düngung 4: 84-104. 1925.—The absolute amount of Vitamin B is higher in plants fertilized with PNK than plants fertilized with only N and K.—*F. M. Schertz.*

7488. LÜERS, H., UND F. OTTENSOOSER. Hefeeiweiss als Antigen. [Yeast protein as

antigen.] Biochem. Zeitschr. 148: 130-146. 1924.—Dried yeast yielded 10% cerevisin and 3% zymocasein at the optimal hydrogen ion concentrations. These proteins were distinguished by the reciprocal precipitin reaction which is considered to indicate that specificity is determined by chemical composition rather than by the biological origin of antigens. Turbidity of beer caused by pasteurization consisted of yeast and barley protein.—*H. D. Hooker.*

7489. SENSU, JŪDO. The comparison of Katjang hidjo with Yaenari in vitamin B (anti-neuritic factor) content. Jour. Biochem. Tokyo 4: 271-275. 1924.—Polyneuritis of birds fed on polished rice can be prevented or cured by feeding Katjang hidjo (*Phaseolus radiatus*). A bean of the same species, known as Yaenari, is cultivated in Japan, and the 2 were compared as to their ability to prevent polyneuritis in full grown cocks fed on polished rice to which 1, 2, or 3% of the beans were added. Katjang hidjo postpones the appearance of symptoms about $1\frac{1}{2}$ times as long as an equal amount of Yaenari.—*Joseph S. Caldwell.*

7490. WU, HSIEN, AND DAISY YEN. Studies of denaturation of proteins. I. Some new observations concerning the effects of dilute acids and alkalies on proteins. Jour. Biochem. Tokyo 4: 345-384. 1924.—The effect of dilute acids and alkalies on edestin from hemp, zein and gliadin, egg albumins, hemoglobins and serum globulins from various sources, gelatin, derived proteins, proteoses, and peptone were studied with reference to change in solubility, increase in reducing power for Folin-Denis phenol reagent, and liberation of non-protein substances. All the albumins, hemoglobins, and globulins show change in solubility in N/20 HCl or NaOH while gliadin, zein, gelatin, proteose and peptone are unchanged. The rate of denaturation, indicated by the amount of insoluble protein obtained on neutralization, varies with different proteins and may serve as a means of differentiation between proteins. The H-ion concentration decreases in acid protein solutions while the OH-ion concentration decreases in alkaline solutions. In consequence of the change in reaction, the velocity constant decreases with time. The rate of denaturation increases with increasing H-ion concentration in acid solutions or increasing OH-ion concentration in alkaline solutions. The 1st products of denaturation are insoluble; soluble products are of secondary formation. All the proteins rendered insoluble by acid or alkali showed marked increase in reducing power toward the Folin-Denis phenol reagent; those not so affected (zein, gliadin, gelatin, protease, peptone) show no increase. The change in reducing power proceeds at equal rate with denaturation, and hence is due to the same underlying reaction. It is due to increased reactivity of existing reducing groups of the molecule, not to formation of new groups. The fundamental reaction underlying denaturation is a hydrolysis of some specially labile bonds. The use of acids and alkalies, as well as prolonged dialysis, in the preparation of proteins, is dangerous since partial denaturation may occur.—*Joseph S. Caldwell.*

METABOLISM (ENZYMES, FERMENTATION)

7491. DAJA, I. [Zymase and alcoholic fermentation.] (Orig. in Servian, with French résumé.) Glasnik Hrvatskog Prirodoslovnoga Društva [Zagreb] 30: 116-129. 1918.—The author worked with a toluol yeast preparation and comes to the conclusion that the fermentative activity of the living yeast has nowhere been shown to reside exclusively in the zymase. Only a small part of the fermentative activity may be ascribed unquestionably to the zymase, and in respect to the remaining larger part, the proof of its fermentative nature remains to be proved.—*I. Pevalek (translated).*

7492. EISLER, M., UND L. PORTHEIM. Über insulinartige Stoffe aus Bohnen und deren Wirkung auf den Kohlehydratstoffwechsel. [Insulin-like substances in beans and their effect on carbohydrate metabolism.] Biochem. Zeitschr. 148: 566-572. 1924.—Seed of *Phaseolus multiflorus* were shelled and ground in boiling 65% alcohol. After centrifuging, the supernatant liquid was filtered, freed from alcohol in vacuo and again centrifuged. From this extract a precipitate was obtained with 95% alcohol and separated by centrifuging. This precipitate was dissolved in physiological salt solution. The alcoholic residue was evaporated at 36°C. and taken up in salt solution. The blood sugar of rabbits was reduced 20-45% by the extract, though no pathological symptoms developed. The precipitate reduced blood sugar, but the alcoholic residue had no effect. Hydrolysis of starch by saliva or

by taka diastase was retarded by the extract and by the alcoholic residue, but was hastened by the precipitate. In 5 out of 6 cases, cotyledons of *Phaseolus vulgaris*, ground, taken up in the salt solution and strained, showed less sugar after treatment with the extract than the checks. Treatment with the precipitate reduced the starch content and increased acet-aldehyde and alcohol. The alcoholic residue had no effect.—*H. D. Hooker*.

7493. ENGELHARDT, W. Über die Wirkung der Antiphenolase in adsorbiertem Zustande [Activity of adsorbed antiphenolase.] *Biochem. Zeitschr.* 148: 463-468. 1924.—Antiphenolase and the serum proteins were adsorbed from immune serum by colloidal iron hydroxide, aluminum hydroxide, charcoal, and kaolin. Except in the last case, the antiferment maintained its specific capacity of combining quantitatively with the corresponding phenolase. Lactarius antiferment could not be extracted or expressed from the adsorbed mixture by treatment with inactive Lactarius sap or with active Russula sap.—*H. D. Hooker*.

7494. FLEURY, PAUL. Recherches sur la laccase. IV. Action du chlorure de sodium. Influence de la reaction du milieu. [Studies on laccase. IV. Action of sodium chloride and the reaction of the medium.] *Bull. Soc. Chim. Biol.* 7: 188-194. 1925.—Continuing earlier studies (*Bull. Soc. Chim. Biol.* 6: 436-448; 449-463; 536-584, 1923. See Bot. Absts. 14, Entries 799, 800, 801) the inhibiting effect of NaCl upon the activity of laccase was investigated in its relation to the pH of the medium. When a constant amount of the salt is added to solutions of various pH values, the inhibiting effect of NaCl is nil on the alkaline side (pH 8.4-7.3) becomes apparent at 7.2, and progressively increases toward the acid side. At pH 4.5 the action is only 10% of that observed at the same pH in the absence of NaCl. There is a displacement of the point of optimum activity toward the alkaline side when sodium chloride is present. The effect of the salt in some manner intensifies the effect of the H-ion in depressing the velocity of oxidation of guaiacol.—*Joseph S. Caldwell*.

7495. HERISSEY, H. Sur la présence d'une glucoside dédoublable par l'émulsine dans le *Baillonia spicata* H. Bn. et sur la produits de dedoublement de ce glucoside. A glucoside hydrolyzable by emulsin in *Baillonia spicata*, and the products of its hydrolysis.] *Bull. Soc. Chim. Biol.* 7: 195-201. 1925.—Young leafy shoots of the tree contain a glucoside hydrolyzable by emulsin, which is given the name baillonioside. Emulsin splits it into d-glucose and baillonigenol; the latter has the structure of a lactone and has been purified and crystallized.—*Joseph S. Caldwell*.

7496. NEUBERG, C., UND K. LINHARDT. Die enzymatische Spaltung benzoilyierter Aminosäuren und ihr asymmetrischer Verlauf. [Enzymatic cleavage of benzoylated amino-acids and its asymmetric course.] *Biochem. Zeitschr.* 147: 372-376. 1924.—Taka diastase contains an amidase that acts on hippuric acid and its homologs. Benzoyl-d.l.-alanine yielded benzoic acid and d-alanine, benzoyl-l-alanine not being hydrolyzed.—*H. D. Hooker, Jr.*

7497. NEUBERG, C., UND J. NOGUCHI. Über die enzymatische Spaltung der Phenacetursäure. [The enzymatic cleavage of α -toluyl glycine.] *Biochem. Zeitschr.* 147: 370-371. 1924.—Taka diastase hydrolyzed α -toluyl glycine to phenyl acetic acid and glycine. Fresh Japanese diastase gave the best results.—*H. D. Hooker, Jr.*

7498. NOGUCHI, J. Über den Abbau von Nucleinsäuren durch Takadiastase. [The cleavage of nucleic acids by taka diastase.] *Biochem. Zeitschr.* 147: 255-257. 1924.—Phosphoric acid was liberated from both plant and animal nucleic acids by taka diastase.—*H. D. Hooker, Jr.*

7499. OPARIN, A., UND A. BACH. Über die Bedeutung des Sauerstoffs für die Fermentbildung in keimenden Pflanzensamen. [The significance of oxygen for enzyme formation in germinating seed.] *Biochem. Zeitschr.* 148: 476-481. 1924.—Moistened meal of wheat seedlings kept for 2 days under toluol showed a marked increase in peroxidase, protease, and amylase content in the absence of oxygen, presumably as a result of enzyme liberation during autolysis. In the presence of oxygen a further increase was observed. In the absence of oxygen catalase content decreased and oxygen augmented the decrease. During oxidation of the meal or its extract in an anode chamber the content of each enzyme increased to a maximum and then decreased. When plant protein was digested by trypsin and subsequently oxidized in an anode chamber, peroxidase appeared in the solution, though none was evident in the original material. Negative results were obtained with egg albumen and crystalline

plant globulins. Under favorable conditions the peroxidase and amylase was doubled in amount.—*H. D. Hooker.*

7500. PRINGSHEIM, H., UND A. BEISER. Über in Komplement der Amylasen und das Grenzextrin. [A complement for amylases and undigested dextrin.] *Biochem. Zeitschr.* 148: 336-343. 1924.—Amylose was hydrolysed by amylase faster than amylopectin. Without complement, amylose was completely converted to maltose. Amylopectin hydrolysis was accelerated by complement. The unhydrolysed dextrin of starch digestion is probably a product of amylopectin. Amylopectin and glycogen behaved similarly to complement, which is probably associated with malt amylase in the natural state.—*H. D. Hooker.*

7501. SUNDQUIST, LEONA. Some enzymatic actions of *Nereocystis luetkeana*. *Publ. Puget Sound Biol. Sta.* 3: 331-336. 1925.—The author succeeded in securing from both fresh and dried fronds of *Nereocystis* a substance which hydrolyzes the starches of higher plants to reducing sugars. It was demonstrated with the starch of potato, corn, sago, arrowroot, and tapioca. When the enzyme solution was boiled for 2 minutes only, traces of hydrolysis could be secured, thus showing that heat had an inhibitory effect upon the enzyme. A substance was secured from the kelp fronds which is soluble in water and yields reducing sugars when hydrolyzed with HCl.—*T. C. Frye.*

ORGANISM AS A WHOLE

7502. ANDREWS, FLORENCE B. Resistance of marine animals of different ages. *Publ. Puget Sound Biol. Sta.* 3: 361-363. 1925.—Younger animals are less resistant to fatal conditions, but have greater capacity for acclimatization than the older.—*T. C. Frye.*

7503. FURTADO, C. X. Ripening of coconut flowers. *Agric. Jour. India* 18: 561. 1923.—The author states that further observations at Akyab and at Singapore confirm his former statement that the male flowers continue to open after some or all the female flowers in the same inflorescence have ripened. Attention is drawn to similar observation by Jack and Sands in Malaya.—*A. Howard.*

7504. [IVANOV, S. L.] ИВАНОВ, С. Л. Влияние климатических Факторов на Физиолого-химические признаки растений Скрытые признаки. [The influence of climatic factors on the physiological-chemical characters of the plants.] (English summary.) *Труды по прикладной Ботанике и селекции* [Bull. Appl. Bot. and Plantbreed.] 13²: 483-491. 1922-1923 [1924].—According to the experiments of the author and of K. Kardashev, climatic conditions greatly influence the formation of unsaturated acids in the oil of seed; a warm climate lowers the content of acids, while a cool climate increases the quantity of these. Most sensitive to climatic influence is the unsaturated linolenic acid $C_{18}H_{30}O_2$ with 3 double connections. Seed of *Camelina sativa* raised in the southern part of Russia did not contain any linolenic acid, while those raised in the northern part contained an appreciable amount. The author proposes to call "concealed physiological-chemical characters" those which under certain climatic conditions develop and under others do not do so.—*M. Demerec.*

7505. JANERT, H. Ist Kohlensäure ein klimatischer Wachstumsfaktor? [Is carbonic acid a climatic growth factor?] *Zeitschr. Pflanzenernähr. u. Düngung* 4: 105-109. 1925.

7506. WIESSMANN, HANS. Hat Kieselsäure bei unzureichender Phosphorsäure-ernährung einen Einfluss auf den morphologischen und anatomischen Bau des Roggenhalmes? [With deficient phosphoric acid, has silicic acid an influence upon the morphological and anatomical structure of rye straw?] *Zeitschr. Pflanzenernähr. u. Düngung* 4: 73-83. 1925.—There was no influence upon the internal structure, while the effect upon external structure was inconclusive.—*F. M. Schertz.*

MOVEMENTS OF GROWTH AND TURGOR CHANGES

7507. BOSE, J. C. Transmission of stimuli in plants. *Nature* 115: 49. 1925.—Reference is made to an article by Dixon (*Nature* 114: 626) on conduction through a gap filled with water. The writer states that his work showed no evidence of transmission in such manner. This is reported also by Koketsu (1923).—*O. A. Stevens.*

7508. GOEBEL, KARL E. Die entfaltungsbewegungen der pflanzen und deren teleologische deutung. *Ergänzungsband zur "Organographie der pflanzen."* [Growth-unfolding

movements and their teleological significance. Supplement to "Organography of plants."]
2nd ed. rev. x + 505 p. *Illus.* G. Fischer: Jena, 1924.

7509. MEVIUS, W. Zur Chemonastie von *Drosera rotundifolia* I. [Chemonasty of *Drosera rotundifolia*.] *Biochem. Zeitschr.* 148: 548-565. 1924.—In weak concentrations of sodium halides, tentacles of *Drosera rotundifolia* began to bend after a short interval and were again straight in 24 hours. In stronger solutions, 0.1-0.25 N, bending began more slowly and the tentacles did not unbend within 24 hours; the osmotic concentration of the epidermal cells was greatly increased. Sodium nitrate produced greater stimulation and more injury. In 0.25 N solutions injury was too rapid to allow bending. Sodium sulphate solutions were less stimulating and led to bending only in more concentrated solutions. With potassium salts bending began more quickly in the stronger solutions. For both Na and K salts the strength of the stimulus was greatest for nitrates, less for halogens and least for sulphates. Bending at 51°C. was prevented by chlorides of the earth alkalis and 0.25 N KCl, but bending usually followed after cooling in the solution. There was no summation of heat and chemical stimuli. Transfer of leaves from earth alkali solutions to NaCl led to immediate bending. Leaves lived more than 14 days in strong CaCl_2 solutions, showing that Ca-ions are not toxic.—H. D. Hooker.

7510. SNOW, R. Transmission of stimuli in plants. *Nature* 115: 82-83. 1925.—This is a comment upon articles by Dixon and Bose (*Nature* 114: 626; 115: 49), with further comments upon the author's own experiments. He agrees with Bose in part. In the leaf, the conduction of stimuli occurs through the phloem and not through the transpiration current. In the stem, conduction through the bast is very weak or fails entirely, and a slower conduction by the transpiration current is shown.—O. A. Stevens.

GERMINATION, RENEWAL OF ACTIVITY

7511. BOKORNY, TH. Bases als Wachstumfördernde Mittel, Beizung von Samen damit und mit anderen Stoffen. [Bases as growth promoting agents. Corrosion of seed with these and with other substances.] *Zeitschr. Pflanzenernähr. u. Düngung* 4: 178-190. 1925.—Barley, peas, and beans were treated with NaOH or KOH. Spring water was used as a control.—F. M. Schertz.

7512. GOTOH, KAZUO. On the influence of dissolved alkali out of cover glass on pollen germination. (Japanese.) *Bot. Mag. Tōkyō* 38: (65)-(75). 1924.—The rate of pollen germination is remarkably influenced by H-ion concentrations. It is pointed out that the cover glass used in the study of pollen germination should be non-alkaline, especially in hanging-drop cultures. Alkali which is dissolved out of alkaline glass changes the H-ion concentration of the germination liquid, and thereby the result of the experiment is changed. This precaution is the more necessary, the weaker the buffer action of the liquid. This applies also to the slide.—Author. (*Courtesy Japanese Jour. Bot.*)

7513. HUNGER, F. W. T. Nature and origin of coco-nut pearls. (Reprint. from *Proc. K. Akad. Wetenschap. Amsterdam* 26: Nos. 5 and 6.) *Nature* 115: 138-139. 1925.—The history of the subject is reviewed, and the germination of the seed described. The "pearl" is regarded as a calcified haustorium, retained after primary germination has been checked by the absence of a germ pore. Only 1 pearl was found in 7 "blind" nuts examined by the author.—O. A. Stevens.

7514. KOMURO, HIDEO. Studies in the effect of Röntgen rays upon the germination of *Oryza sativa*. *Bot. Mag. Tōkyō* 38: 1-20. 4 fig. 1924.—The results of the experiments may be summed up in the following statements: (1) The germination of air-dried seed and of steeped seed was accelerated by the irradiation of X-rays. (2) The acceleration of germination is obviously shown in the seed X-rayed in the air-dried condition, and the dose of 5-10 H (Holzknecht's unit) seemed to be an optimum. 10 H especially showed an evident acceleration of germination. (3) In the further growth after germination, plants grown from the seed irradiated after 12 hours' steeping were worse than plants grown from the seed X-rayed in the air-dried condition. In the latter case, between the state of growth of the controls and that of X-rayed material there appeared no great difference. But in the

former case the irradiated showed the better growth in an earlier stage. (4) In the case of steeped-irradiated material, 15 H seedlings generally grew well. The 5 H, 7 H and 10 H seedlings were poorer in growth than the controls at the time of germination, but in the further growth stages surpassed them. (5) The acceleration of germination varies with the current (in the case of the same material and the same hour of exposure) and the hour of irradiation (in the case of the same material and under the same current) in a definite tube.—*Author.* (*Courtesy Japanese Jour. Bot.*)

7515. ZEHENDNER, S. M. Über Regeneration und Richtung der Seitenwurzeln. [Regeneration and direction of growth of lateral roots.] *Flora* 117: 301-343. 1924.—In general the roots of angiosperms and gymnosperms do not form all the lateral roots of which they are capable, but if the main root is decapitated or the lateral roots removed, one or more times, there will be a further production of lateral roots which develop from latent primordia and are not ordinarily new structures. In ferns this does not occur. In most angiosperms the number of latent primordia is about equal to the number which develop; they are relatively few in gymnosperms and are lacking in ferns.—The author's experiments support Noll's theory that the direction of growth of roots is determined by internal as well as external factors. He finds the lateral roots positively geotropic. The usual plagiotropic response is due to the influence of the main root (exotropism). If the vigor of the main root is lowered by mutilation or poor nutrition, the natural tendency of the lateral roots becomes evident and they grow downward. This explains the bending downward of lateral roots arising near the tip of an injured root although those near the hypocotyl where the main root is more vigorous make the usual plagiotropic response. The more unfavorable the living conditions the more marked is the positive response of the lateral roots.—*A. G. Stokey.*

TEMPERATURE RELATIONS

7516. WEST, CYRIL. Effects of freezing and low temperatures upon plants. *Sci. Prog.* 18: 386-392. 1924.—Our knowledge of the effect of low temperatures and frosts on vegetation has been largely empirical, the actual physiological data being meager. However, many problems of interest have been revealed in the numerous recent investigations cited in this review. These articles touch upon supercooling, relation of pentosan content to hardness, transformation of starch to sugar at low temperatures, alteration by cold of normal metabolic and enzymatic processes, physiological diseases induced by cold, and other phases of the subject of low temperature in its effects upon growing or stored plants.—*L. A. Kenoyer.*

TOXIC AGENTS

7517. RIEDE, W. Produktionsmehrung durch Stimulantien. [Increasing production by stimulants.] *Zeitschr. Pflanzenernährung. u. Düngung* 3: 533-536. 1924.—This is a discussion of various stimulating agents.—*F. M. Schertz.*

7518. ZIRPOLO, GIUSEPPE. Studi sulla bioluminescenza batterica. 5. Azione del nitrato di cerio ($\text{Ce}(\text{NO}_3)_6 \cdot 6\text{H}_2\text{O}$). [Bacterial bioluminescence. Action of cerium nitrate.] *Boll. Soc. Nat. Napoli* 34 (Ser. 2, 14): 46-49. 1921-1922 [1923].—Cerium nitrate is toxic to *Bacillus pterantonii* Zirpolo in dilutions of 1:5 to 1:50. Intensity of light was somewhat increased in cultures containing a slight trace of cerium.—*Edith K. Cash.*

MISCELLANEOUS

7519. HIRSCH, P. Neue Möglichkeiten der Acidimetrie, besonders zur Anwendung auf Eiweisskörper und deren Spaltungsprodukte. [New possibilities in acidimetry with special reference to proteins and their cleavage products.] *Biochem. Zeitschr.* 147: 433-480. 7 fig. 1924.—An original development in the theory of acidimetry is presented. A titration function, θ , is derived and shown to be superior to functions previously used. The function θ is independent of the volume of the titration mixture and of the weight of sample used; it depends on the H-ion concentration only. It applies generally to acids, bases, and amphoteres as members of 1 generalized system. The new function is applied to the titration of mono- and polybasic amino-acids, of mixtures, and of proteins. The acid and basic dissocia-

tion constants are calculated for certain compounds by means of the θ function. The original article should be consulted.—*L. W. Gaddum.*

7520. MICHAELIS, L., AND M. MIZUTANI. Die ph-Messung mit einfarbigen Indikatoren in alkoholischen Lösungen. [Measurement of pH with monochromatic indicators in alcoholic solution.] *Biochem. Zeitschr.* 147: 7-21. 2 fig. 1924.—Definitions are derived for the pH value and the dissociation constant in alcoholic solution. The pH values are determined for *m*-nitrophenol, *p*-nitrophenol, α -dinitrophenol and γ -dinitrophenol at various concentrations of alcohol. The pH values at various color intensities of phenolphthalein are given for various percentages of alcohol. With these data, it is possible to measure the pH of alcoholic solutions without buffers.—*H. D. Hooker, Jr.*

7521. RISCH, C. Eine titrimetrische Bestimmung der Wasserstoffionenkonzentration. [A titrimetric determination of hydrogen ion concentration.] *Biochem. Zeitschr.* 148: 147-149. 2 fig. 1924.—Values of pH above 8.5 are determined by a colorimetric titration with N/100 potassium permanganate.—*H. D. Hooker.*

7522. RONA, P., UND F. LIPMANN. Über die Wirkung der Verschiebung der Wasserstoffionenkonzentration auf den Flockungsvorgang beim positivem und negativem Eisenhydroxydsol. [The action of hydrogen ion concentration on flocculation in positive and negative sols of iron hydroxide.] *Biochem. Zeitschr.* 147: 163-173. 1924.—The flocculation values of anions followed Hofmeister's series closely, and the order was not affected by changes in H-ion concentration, though a definite effect on sensitization was produced. The relatively greater effect of H-ion concentration on protein sols as reported by Loeb is attributed to their greater hydration.—*H. D. Hooker, Jr.*

TAXONOMY OF VASCULAR PLANTS

J. M. GREENMAN, *Editor*

E. B. PAYSON, *Assistant Editor*

(See also in this issue Entries 6839, 6906, 6929, 6977, 7043, 7048, 7112, 7141)

GENERAL

7523. CLEMENTS, F. E., AND E. S. CLEMENTS. The natural system of angiosperms. *Carnegie Inst. Washington Yearbook* 23: 255-256. 1924.

7524. HAINES, H. H. The botany of Bihar and Orissa. An account of all the known indigenous plants of the Province and of the most important or most commonly cultivated exotic ones. Part VI. *Small 8vo. P. 1059-1350.* Adlard and Son and West Newman: London, 1924.—This part completes the treatment of the genus *Ophiurus* and continues through the Orchidaceae and the entire group Pteridophyta. Two appendices and an index to Parts II-VI are added. The following new species, varieties, and combinations are included: *Mnesithea perforata* (*Rottboellia perforata* Roxb.), *Euchlaena mexicana* Schrad. var. *luxurians* (*Reana luxurians* Brogn.), *Xyris coronata*, *Eriocaulon Edwardii* Fyson var. *Clarkei*, *Aneilema terminalis* (*Tradescantia terminalis* Blume), *Asparagus racemosus* Willd. var. *Prainii*, *Dioscorea pentaphylla* L. vars. *communis* Burkill and *cyathiformis*, *Zingiber casumunar* Roxb. var. *palamaunsi*, *Nephrodium aridum* Don vars. *pilosissimum* and *maximum*, *N. proliferum* (*Goniopteris prolifera* Presl.), and *Marsilia minuta* L. var. *major* (*M. quadrifoliata* Beng., not L.). (See also Bot. Absts. 10, Entry 808; 11, 4784; 12, 2169; 13, 8066.)—*J. M. Greenman.*

7525. LANGE, L. Sero-diagnostische Untersuchungen über die Verwandtschaften innerhalb der Pflanzengruppe der Ranales. [Sero-diagnostic investigations on the relationships within the Ranales.] *Mez, Bot. Archiv* 5: 413-433. 1 fig. 1924.—The Ranales present, on serodiagnostic evidence, a closed form-group which begins with the Magnoliaceae and proceeds to the Ranunculaceae, Berberidaceae, Lardizabalaceae and Menispermaceae. As a side branch from this main stem of the plant kingdom, one proceeds from the Magnoliaceae through the Calycanthaceae, Monimiaceae, Gomortegaceae to the Lauraceae; another also proceeds from the Magnoliaceae through the Anonaceae to the Myristicaceae. To this last side branch

lateral branches lead to the Aristolochiaceae. The Nymphaeaceae present a branch of their own from above the Magnoliaceae, and from the Ranunculaceae branch the Rosaceae-Leguminosae. The Magnoliaceae gave sero-reactions with the Pinaceae, which establishes connection of the dicotyledons with the Pinaceae, with the Magnoliaceae as the lowest family. From this it follows that the cone is a flower and not an inflorescence, and from this it also follows that the cone scale is not an axial organ. The combination of carrying scale and cone scale in the Pinaceae must be referred back to the sporophyll and ligula of the Lycopodiales ligulatae. From this it follows that the connection of the dicotyledons cannot be through the Amentales which requires the flower of Conifers to be an inflorescence. Reaction was also obtained between *Magnolia* and *Alisma* and to the lowest monocotyledons, which proves that the monocotyledons branch from the Ranales.—*Carl Mez (translated by William Seifriz).*

7526. MATTE, HENRI. *Flore de Bretagne. Synopsis analytique illustre des plantes vasculaires observées dans le massif Américain. [Flora of Brittany.]* 128 p. Pl. 1-81, fig. 1-87. Imprimerie Oberthur: Rennes, 1923.

7527. SALTZMANN, B. *Ergänzende sero-diagnostische Untersuchungen. [Sero-diagnostic investigations.]* Mez, Bot. Archiv 8: 3-36. 1 fig. 1924.—In Lange's work it was, because of technical difficulties, impossible to get reactions from and to the Lauraceae and the Myristicaceae of the Ranales. This has now been accomplished, and it is found that the Myristicaceae end the Anonaceae branch; and the Lauraceae end the Calycanthaceae branch. Because of poisonous seed it has not so far been possible to obtain "immunization" from the Menispermaceae. This has now been accomplished through the use of leaf albumin. The Menispermaceae lie between the Ranunculaceae and the Magnoliaceae. The Trochodendraceae are closely related to the Magnoliaceae. Because of the poison of *Ephedra* it was not possible to obtain a serum of this plant. The entire Ranales system has been sero-diagnostically gone over and substantiated.—*Carl Mez (translated by William Seifriz).*

7528. SZAFER, WLADYSŁAW, STANISŁAW KULCZYŃSKI, AND BOGUMIL PAWŁOWSKI. *Rosliny Polskie. [Plants of Poland.]* 8vo. xxxvi + 738 p. 7 pl., 1 map. Ksiaznica-Atlas: Lespot, Warsaw, 1924.—This is a key for all native, naturalized and cultivated vascular plants growing in Poland, intended for the use of all students of botany, as well as agriculturists, foresters, pharmacists and plant lovers. About 2700 species are described and their geographical distribution is given. A map with the divisions of Poland in botanical districts helps to determine the localities.—*H. Czeczott.*

SPERMATOPHYTES

7529. ANONYMOUS. *Decades Kewenses. Plantarum novarum in Herbario Horti Regii Conservatarum. Decas cvii.* Kew Bull. 1923: 115-120. 1923.—The following species are delimited and proposed as new: *Orophea torulosa*, Middle Andaman Islands, by [J.] HUTCHINSON; *Aeschynomene bracteolaris*, *Vaccinium Gonzalezii*, *Buchnera minor*, all 3 from Sinaloa, Mexico, by [L. A. M.] RILEY; *Torenia courtallensis*, *Didymocarpus Fischeri*, both from South India, by [J. S.] GAMBLE; *Calanthe pubescens*, Malay Peninsula, *Vanda punctata*, Malay Archipelago, by [H. N.] RIDLEY; *Habenaria medioflexa*, by [W. B.] TURRILL, cultivated in Botanic Gardens, Singapore, originally collected at Pungah, Lower Siam; and *Curcuma sulcata*, Central Provinces, in the Vindhyan mountains, India, by [H. H.] HAINES.—*T. J. Fitzpatrick.*

7530. ANONYMOUS. *Diagnoses Africanæ: LXXVII.* Kew Bull. 1923: 180-185. 1923.—The species described and proposed as new by [J.] HUTCHINSON are: *Clematis altissima*, *Tetracera affinis*, and *T. eriantha*, all from Tropical Africa. Those by [T. F.] CHIPP are: *Popowia cauliflora* and *Xylopia villosa*, both from Tropical Africa. Those by [T. A.] SPRAGUE are: *Popowia diclina* and *Kalanchoë connata*, from Tropical Africa, and *Homalium subsuperum* from South Africa. *Smithia parvifolia* by [J.] BURTT-DAVY and *Leucospermum cordatum* by [E. P.] PHILLIPS are described as new species from South Africa.—*T. J. Fitzpatrick.*

7531. BAKHUIZEN VAN DEN BRINK, R. C. *Bombacaceae in India batava orientali crescentes. Contributions à l'étude de la flore des Indes néerlandaises. IV. [The Bombacaceae growing in the Dutch East Indies. Contributions to the study of the flora of the Dutch East Indies.]* Bull. Jard. Bot. Buitenzorg III. 6: 241-254. 1924.—The author presents an enumeration of the Bombacaceae of the Dutch East Indies preceded by a key to the genera, of which

there are 6. The genera are provided with keys to species and under each species the specimens seen are enumerated. The following varieties and combinations are new: *Gossampinus heptaphylla* (Houtt.) Bakh. var. *malabarica* (DC.) and var. *grandiflora* (Blanco), *Neesia altissima* Bl. f. *typica* and f. *ambigua* (Becc.), *Durio Griffithii* (Mast.) Bakh. var. *Heteropyxis* (Griff.) and var. *acutifolius* (Mast.).—*Alfred Rehder*.

7532. BAKHUIZEN VAN DEN BRINK, R. C. *Index Bombacacearum quae anno 1923 in Horto botanico bogoriensi coluntur*. [Index of the Bombacaceae growing in the Botanical garden at Buitenzorg.] Bull. Jard. Bot. Buitenzorg III. 6: 255. 1924.—The species of Bombacaceae cultivated at Buitenzorg are enumerated.—*Alfred Rehder*.

7533. CHOUX, P. *Sur quelques Asclépiadacées de Madagascar récemment reçues par le Muséum National d'Histoire naturelle de Paris*. [Some Madagascar Asclepiads recently received at the Museum.] Bull. Mus. Hist. Nat. [Paris] 29: 448-451. 1923.—The author mentions 13 species of Asclepiadaceae from Madagascar, and describes *Tanulepis Decaryi* n. sp.—*John M. Fogg, Jr.*

7534. [GROSSGEIM, A. A.] Гроссгейм, А. А. *Новая раса дикой горной ржи*. *Secale Vavilovi* М. из Закавказья. [A new variety of wild mountain rye in Transcaucasia.] (English summary) Труды по прикладной Ботанике и селекции [Bull. Appl. Bot. and Plantbreed.] 13²: 461-482. 1922-1923 [1924].—The author gives a general survey of the collective species *Secale montanum* Guss. He establishes the fact that the latter falls into several geographical varieties, morphologically well distinguished from each other. The whole area of the species is the region of the Mediterranean and western Asia as far as Persia and The Far East. *S. montanum* Guss. grows in Spain, Sicily and Morocco, while in Dalmatia and Herzegovina *S. dalmaticum* Vis. is found. On the Balkan Peninsula and the western part of the main range of the Caucasus a particular variety occurs, which has not yet been described owing to deficiency of material. *S. anatolicum* Boiss. grows in western Asia, and *S. ciliatoglume* (Boiss.) Grossh. occurs in Kurdistan, while in the districts adjoining the middle course of the Aras grows the variety *S. Vavilovi* n. var. The new variety differs from the others by being annual while the others are perennial, and by having a glaucous bloom, short stature and small spikelets. Ecologically it is a psammophyte. It occurs at a height of 2000-2500 m. while the other varieties growing in that region exist at altitudes of not less than 5000 m. Owing to its morphological peculiarities, *S. Vavilovi* appears to be a connecting link between *S. montanum* Guss. and *S. cereale*. A table noting the characteristics of all the above mentioned varieties of *Secale* is given.—*M. Demerec*.

7535. GUILLAUMIN, A. *Plante nouvelle des serres du Muséum*. [A new plant from the greenhouses of the Museum.] Bull. Mus. Hist. Nat. [Paris] 29: 396. 1923.—The author describes *Clavija brachystachys* Ad. Brongniart mss., in Herb. Mus. Paris ex Guillaumin n. sp. This plant was introduced into the Museum in 1852, source unknown.—*John M. Fogg, Jr.*

7536. HITCHCOCK, A. S. *The genera of grasses of the United States, with special reference to the economic species*. U. S. Dept. Agric. Bull. 772. 1-307. Pl. 1-20, fig. 1-174. 1920.—"The present bulletin describes all the genera of grasses that include species that are native have been introduced, or are cultivated in the United States. Under each genus are given the species that are of economic importance, either as useful or harmful grasses. . . . It is intended to give under each genus the botanical information concerning all our grasses that are conspicuous enough to have attracted the attention of agriculturists. The keys to the tribes and genera should enable the user to identify the genera of all our grasses and the text under each genus should enable him to determine the species of our economic grasses. Under each genus are given the type and the synonyms based upon American species, or the names that have been used in an American publication." New names and combinations are as follows: *Aspris capillaris* (*Aira capillaris* Host); *Blepharidachne Benthiana* (*Munroa Benthiana* Hack.); *Brachiaria ciliatissima* Chase (*Panicum ciliatissimum* Buckl.); *Capriola dactylon maritima* (*Cynodon maritimus* HBK.); *Echinochloa crusgalli edulis* (*Panicum frumentaceum* Roxb., 1820, not Salisb., 1796); *Echinochloa crusgalli zelayensis* (*Oplismenus zelayensis* HBK.); *Epicampes Emersleyi* (*Muhlenbergia Emersleyi* Vasey); *Epicampes subpatens*; *Fluminea festucacea* (*Arundo festucacea* Willd.); *Muhlenbergia andina* (*Calamagrostis andina* Nutt.); *Muhlenbergia montana* (*Calycodon montanum* Nutt.); *Osterdamia japonica* (*Zoysia japonica*

Steud.); *Pholiurus incurvatus* (*Aegilops incurvata* L.); *Polypogon lutosus* (*Agrostis lutosa* Poir.); *Triodia flava* (*Poa flava* L.).—Frederick V. Rand.

7537. JÁVORKA, S. Adnotatio ad cognitionem generis *Alyssoides* Mill. (= *Vesicaria*). [Note on the recognition of the genus *Alyssoides* Mill.] Bot. Közlemények 21: 73. 1923 [1924].—The genus *Alyssoides* Mill. is recognized and a new subspecies is described, namely *A. graecum* (Reut.) subsp. *macrocarpum* (Kit.) from Herculesfürdő, Hungary.—I. Györfly (translated).

7538. KLETT, W. Umfang und Inhalt der Familie der Loganiaceen. [Phylogeny of the Loganiaceae.] Mez, Bot. Archiv 5: 312–338. 1924.—Pronounced differences exist between the members of this family. The author, however, regards the family as a unified group. The Loganiaceae in their relation to other families of the Tubiflorae have a primitive position.—Carl Mez (translated by William Seifriz).

7539. LAM, H. J. Index Sapotacearum quae anno 1924 in Horte[sic] botanico bogoriensi coluntur. [Index of Sapotaceae cultivated in 1924 in the Botanic Garden at Buitenzorg.] Bull. Jard. Bot. Buitenzorg III. 6: 158–160. 1924.—A list is given of the species of Sapotaceae cultivated at Buitenzorg.—Alfred Rehder.

7540. NEUMAYER, HANS. Alsineae aus China. [Alsineae from China.] Verhand. Zool.-Bot. Ges. Wien 73: (13)–(14). 1924.—The author raises the section *Moehringella* Franchet to generic rank and makes the following new combinations: *Moehringella roseiflora* (*Arenaria roseiflora* Sprague) and *M. linearifolia* (*Moehringia linearifolia* Williams).—J. C. Th. Uphof.

7541. NEUMAYER, HANS. Die Frage der Gattungsabgrenzung innerhalb der Silenoideen. [Genus boundary within the Silenoideae.] Verhandl. Zool.-Bot. Ges. Wien 72: (53)–(59). 1923.—The subfamily *Silenoideae* is divided by the writer into *Saponarieae*, *Sileneae* and *Diantheae*. The results of critical studies are given of various genera. *Silene quadrifida* L. *Marchesettii* is described as a new subspecies, and *Silene liponeura* is given as a new name for *Viscaria alpina* (L.) Don.—J. C. Th. Uphof.

7542. NEUMAYER, HANS. Die Gattungsabgrenzung innerhalb der Diantheen. [The genus boundary within the Diantheae.] Verhandl. Zool.-Bot. Ges. Wien 65: (22)–(24). 1915.—In a dichotomous key the Diantheae are divided into the following genera: *Uebelinia* Hochst., *Triainopetalum* n. gen., *Ankyropetalum* (Fenzl) Pax, *Velezia* L., *Dianthus* L., *Drypis* L., *Cucubatus* L., *Petrocoptis* A. Br., *Agrostemma* L., *Wahlbergella* Fries, *Silene* L., *Acanthophyllum* C. A. Mey., *Saponaria* L., and *Vaccaria* Medic.—J. C. Th. Uphof.

7543. PERRIER DE LA BATHIE, H. Crassulacées malgaches nouvelles. [New Malgachian Crassulaceae.] Bull. Mus. Hist. Nat. [Paris] 29: 452–455. 1923.—Four new species from Madagascar are described, as follows: *Sedum madagascariense*, *Kalanchoe tetraphylla*, *K. mandrakensis*, ad *K. aromatica*.—John M. Fogg, Jr.

7544. SCHELLENBERG, G. Die systematische Gliederung der Gramineen. [Taxonomic relationship of the Gramineae.] Mez, Bot. Archiv 1: 257–260. 1 fig. 1922.—The author finds relationship to exist between the Gramineae and the Commelinaceae, which has also been established by Worseek on sero-diagnostic evidence. With Bessey the author finds in the Gramineae a reduction series in which the number of flower parts, which in the *Oryzeae* and *Bambuseae* is still far above the norm of other forms, is reduced in the spikelet. The *Oryzeae*, *Bambuseae*, and *Festuceae* are supposed to have come from the prehistoric grasses, and the remainder of the grass tribes from the *Festuceae*. The maximum in reduction is reached in the *Maydeae*.—Carl Mez (translated by William Seifriz).

7545. SCHELLENBERG, G. Pseudellipanthus, genus novum Connaracearum. Mez, Bot. Archiv 1: 314–315. 1922.—*Pseudellipanthus* n. gen. is described. It stands near *Ellipanthus*. The species are: *P. Beccarii* (*Ellipanthus Beccarii* Pierre) and *P. peltatus* (*E. peltatus* Boerl. & Koord.) both from Borneo.—Carl Mez (translated by William Seifriz).

7546. SLOOTEN, D. F. VAN. The Combretaceae of the Dutch East Indies. Contributions à l'étude de la flore des Indes Néerlandaises. II. [Contributions to the study of the flora of the Dutch East Indies. II.] Bull. Jard. Bot. Buitenzorg III. 6: 11–64. Fig. 1–5, 1 map. 1924.—The author presents this paper as an extension and revision of his dissertation published in 1919 on the Combretaceae and Flacourtiaceae of the Dutch East Indies. There is a key to the genera, of which there are 4, and under each genus a key to the species. Under each

species, literature and synonyms are cited and a description is given, followed by detailed notes on the distribution and citations of specimens; some species are illustrated. The following species are new: *Terminalia gigantea*, *T. kangeanensis*, *T. trivialis*, *Combretum tetralophoides*, and *C. adenophorum*.—*Alfred Rehder*.

7547. SMITH, J. J. Index Euphorbiacearum quae anno 1924 in Horto botanico bogoriensi coluntur. [Index of the Euphorbiaceae cultivated in 1924 in the Botanic Garden at Buitenzorg.] Bull. Jard. Bot. Buitenzorg III. 6: 108-115. 1924.—A list is given of the species of Euphorbiaceae cultivated at Buitenzorg.—*Alfred Rehder*.

7548. SMITH, J. J. Plantae novae vel criticae ex Herbario et Horto bogoriensi. III. [New and critical plants from the Herbarium and the Garden of Buitenzorg. III.] Bull. Jard. Bot. Buitenzorg III. 6: 73-107. 1924.—This part contains the following new species, varieties, names and combinations: *Stemona moluccana* C. H. Wright var. *ternatensis*, *S. affinis*, *S. gloriosa*, *S. asperula*, *S. sulensis*, *Tacca flabellata*, *Parartocarpus triandra*, *Prainea microcephala*, *Sauropus convexus*, *Drypetes glabridiscus*, *D. macrostigma* and var. *ecarinata*, *D. subsymetrica*, *D. gigantifolia*, *D. simalurensis* and var. *latifolia*, *D. talamauensis*, *Baccaurea nanihua* Merr. var. *oblongata*, *Coccoceras borneensis*, *Cephalomappa mallotica*, *Trigonostemon verrucosus*, *Homalanthus Beguinii*, *Pimeleodendron macrocarpum*, *P. papaveroides*, and *P. zoanthogyne*.—*Alfred Rehder*.

7549. SMITH, J. J. Tafeln javanischer Orchideen II. [Plates of Javanese Orchids II.] Bull. Jard. Bot. Buitenzorg III. 6: 9-10. Pl. 1-25. 1924.—The 25 plates published here conclude the series of illustrations belonging to the author's 6 supplements of the Orchids of Java. Each plate contains drawings chiefly analytical of 2 to 6 species of orchids.—*Alfred Rehder*.

REVISIONS AND MONOGRAPHS

7550. BABCOCK, E. B., and H. M. HALL. The hay-field tarweeds. Carnegie Inst. Washington Yearbook 23: 259-260. 1924. [See also Bot. Absts. 14, Entry 4304].

7551. BAKHUIZEN VAN DEN BRINK, R. C. Revisio Bombacacearum. [Revision of the Bombacaceae.] Bull. Jard. Bot. Buitenzorg III. 6: 161-240. Pl. 26-38. 1924.—In an introduction the author discusses the limits and relationship of the family and proceeds to give a key to the 19 genera recognized. Under each genus and species the literature and synonymy are fully cited and the distribution is given, but only the genera and the new and critical species are provided with descriptions. Thirteen species are figured. The following species and names are new: *Pachira lukayensis* (DeWild. & Dur.), *Bomax album* (Loddig.), *B. tomentosum* (Mart.), *B. sessile* (Benth.), *B. obtusum* (Spruce), *Gossampinus heptaphylla* (Houtt.), *G. Thorelii* (Gagn.), *G. anceps* (Pierre), *G. albida* (Gagn.), *G. insignis* (Wall.), *G. cambodiensis* (Pierre), *G. Valetonii* (Hochr.), *G. buonopozensis* (Beauv.), *G. reflexa* (Sprague), *G. flammea* (Ulbr.), *G. angulicarpa* (Ulbr.), *Ceiba pentandra* (L.) Gaertn. var. *caribaea* (DC.) and var. *indica* (DC.), *C. trischistandra* (A. Gray), *C. salmona* (Ulbr.), *Catostemma Spruceanum* (Benth.), *Neesia malayana*, *Durio Griffithii* (Mast.), *D. excelsus* (Korth.), and *D. Mansoni* (Gamble).—*Alfred Rehder*.

7552. HALL, H. M. Taxonomy of Haplopappus and of the Madinae. Carnegie Inst. Washington Yearbook 23: 259. 1924.

7553. JEDWABNICK, E. Eragrostidis specierum imprimis ad herb. Berol., Hamburg., Monac., Regimont. digestarum conspectus. [A conspectus of the species of Eragrostis as represented in the herbaria of Berlin, Hamburg, Munich, and Königsberg.] Mez, Bot. Archiv 5: 177-216. 1924.—An enumeration of 256 species with complete synonymy, geographical distribution and collectors numbers, is given. New species, combinations and varieties are as follows, Jedwabnick being the authority unless otherwise stated: *Eragrostis capensis* (*Briza capensis* Lk.), *E. spicata* (*Dactylis spicata* Stapf), *E. acutissima* (tropical east Africa), *E. cchalcantha* Trin. var. *composita* (southeastern Africa), *E. crassa* (Brazil, Argentina), *E. vulcanica* (New Britain), *E. polymorpha* (*Poa polymorpha* R. Br.), *E. fruticans* (southern Arabia), *E. minima* (Nubia), *E. contigua* (Australia), *E. bromoides* (central Sudan), *E. Hildebrandtii* (Madagascar), *E. philippica* (Australia), *E. barbiglumis* (Brazil, Argentina), *E. arundinacea* (Texas), *E. mendozina* (*Ippium mendozinum* Phil.), *E. ciliolata* (Australia), *E. tenax* (New Caledonia), *E. argentina* (Argentina), *E. Schweinfurthiana* (Nubia), *E. Seineri* (southwestern Africa),

E. capillacea (Nebraska), *E. villamontana* (Bolivia), *E. blepharophylla* (Brazil), *E. carolinensis* (Carolina Islands), *E. pubiculmis* (Natal), *E. polyantha* (Hawaiian Islands), *E. macra* (Brazil, Paraguay), *E. Purpusii* (Mexico), *E. villosipes* (Angola), *E. subatra* (Bolivia), *E. floccosa* Hackel (Transvaal), *E. lichiangensis* (China), *E. boliviensis* (Bolivia), *E. polyneura* (Brazil), *E. tristis* (Bolivia, Peru), *E. carazensis* Pilger var. *laxa* (Brazil), *E. kiwuensis* (tropical eastern Africa), *E. depallens* (New Caledonia), *E. novo-caledonica* (New Caledonia), *E. cordobensis* (Argentina), *E. laeviglumis* (central Australia), *E. soratensis* (Bolivia), *E. coerulea* Hillebr. (Hawaiian Islands), *E. sabulicola* Pilger (tropical western Africa), *E. paupera* (Hawaiian Islands).—Carl Mez (translated by F. V. Rand).

7554. JOHNSON, ARTHUR MONRAD. A revision of the North American species of the section *Boraphila* Engler of the genus *Saxifraga* (Tourn.) L. Minnesota Studies Plant Sci. (Studies Biol. Sci. No. 4.) 1: 1-109. Pl. 1-19. 1923.—This is a critical study and revision of the section *Boraphila*, rearranging it into 8 sections. The article contains a key to the sections and a Latin description of 3 new sections: *Chionophila*, *Calthophyllum*, and *Tricarpum*, and a description of the characters limiting the sections. The species are minutely described from specimens examined, and illustrated, and where necessary there is a key to the species of a section. New species, varieties, and combinations included are: *Saxifraga Allenii* (*Micranthes Allenii* Small); *S. Hallii*; *S. klickitatensis*; *S. laevicaulis*; *S. aequidentata* (*M. aequidentata* Small); *S. microcarpa*; *S. petiolata*; *S. rufidula* (*M. rufidula* Small); *S. crassicarpa*; *S. gracillima*; *S. laevicarpa*; *S. purpuripetala*; *S. winnebagoensis*; *S. ferruginea* Graham vars. *foliacea*, *grandiflora*, *cuneata*, *stellariformis*, and *nivea*.—L. O. Regeimbal.

7555. MAIDEN, J. H. A critical revision of the genus *Eucalyptus*. Vol. VII. Part 3. P. 81-132. Pl. 256-259. Alfred James Kent: Sydney, 1924.—Notes are recorded on *Eucalyptus longicornis* F.v.M., *E. Websteriana* Maiden, and *E. nutans* F.v.M. A discussion of *Eucalyptus* seed occupies the major part of the present number, and the seed of 47 species and varieties are illustrated.—J. M. Greenman.

7556. PFEIFFER, H. Monographia Pleurostachydearum. I. Pars specialis descriptioque specierum. [Description of species of Pleurostachys.] Mez, Bot. Archiv 9: 225-242. 1925.—Forty-two species of *Pleurostachys* are listed and described, the following being new; *P. pyirangensis*, *P. Dusenii*, and *P. panicoides*.—William Seifriz.

7557. PIPER, C. V. The American species of *Canavalia* and *Wenderothia*. Contrib. U. S. Nation. Herb. 20: 555-588. 1925.—The generic synonymy, distribution, economic uses, and pollination of these 2 leguminous genera are discussed briefly, followed by the systematic treatment. Of *Canavalia* 26 species are recognized, and of *Wenderothia* Schlecht., an allied genus long referred to the synonymy of *Canavalia* but here reinstated, 12 species. Several doubtful species are mentioned at the end of the systematic treatment of each genus. New species and new names are: *Canavalia nitida* (*Clementea nitida* Cav.), *C. macropleura* (Venezuela), *C. varicolor* (Brazil), *C. puberula* (Colombia and Venezuela), *C. apiculata* (Mexico), *C. arenicola* (Mexico), *C. mexicana* (Mexico to Nicaragua), *C. panamensis* (Panama), *C. paraguayensis* (Paraguay), *C. Fendleri* (Venezuela and Colombia), *C. leptophylla* (Ecuador), *C. boliviana* (Bolivia), *C. amazonica* (Brazil), *C. dictyota* (Venezuela to Brazil), *C. anomala* (Colombia); *Wenderothia acuminata* (*Canavalia acuminata* Rose), *W. bicarinata* (*C. bicarinata* Standl.), *W. obidensis* (*C. obidensis* Ducke), *W. Palmeri* (Mexico), *W. mattogrossensis* (*Mucuna mattogrossensis* Rodr.), *W. altipendula* (Jamaica), *W. grandiflora* (*Canavalia grandiflora* Benth.), *W. picta* (*C. picta* Mart.), *W. lasiocalyx* (*C. lasiocalyx* Kuntze), *W. lenta* (*C. lenta* Benth.), and *W. villosa* (*C. villosa* Benth.).—S. F. Blake.

FLORISTICS AND PLANT DISTRIBUTION

7558. ANONYMOUS. Alien plants recorded as naturalized in Victoria. Victoria Nat. 41: 183. 1925.

7559. BORAS, ÁDÁM. Florisztikai közlemények. [Floristic communications.] Bot. Közlemények 21: 64-70. 1923 [1924].—The following new species, variety, and hybrids from Hungary are described: *Anthericum macrocarpum*, *Pulsatilla Jolanthae* (*P. flavescens* × *P. grandis*), *P. Borosiana* J. Wagn. (*P. patens* × *P. flavescens*), *Laserpitium pruthenicum* L. var. *silafolia*, and *Veronica Joannis Wagneri* (*V. praecox* × *V. triphylla*).—I. Györffy (translated).

7560. CARTER, W. R. Botany. Rept. Prov. Mus. Nat. Hist. [Victoria, British Columbia] 1923: 11-15. 1924.—The author includes a list of supplementary additions to the Flora of Vancouver and Queen Charlotte Islands. A list of recent accessions to the herbarium of the Provincial Museum is also given.—W. C. Muenscher.

7561. GOMBOCZ, E. A *Xanthium spinosum* vándorlása. [The migration of *Xanthium spinosum*.] Bot. Közlemények 21: 79. 1923 [1924].

7562. NEUMAYER, H. Floristisches aus Niederösterreich I-IV. [Floristic notes from lower Austria. Verhandl. Zool.-Bot. Ges. Wien 69: (195)-(201), 1919; 70: (184)-(194), 1921; 72: (60)-(65), 1923; 72: (165)-(172). 1923.—Localities are given of pteridophytes and anthophytes in various parts of Lower Austria. The following are new to science: *Rubus salisburgensis* Focke var. *viennensis* Hayek n. var., *Festuca ovina* L. × *F. rubra* L. (= *F. Kernerii* Vetter n. hyb.), *F. glauca* Lam. × *F. rubra* L. (= *F. Wettsteinii* Vetter n. hyb.), *F. vallesiaca* Schl. × *F. rubra* L. (= *F. Ronnigeri* Vetter n. hyb.), *F. ovina* L. × *F. glauca* Lam. (= *F. Dürnsteinensis* Vetter n. hyb.), *F. vallesiaca* Schl. × *F. glauca* Lam. (= *F. saricola* Vetter n. hyb.), *Galium anisophyllum* Vill. × *G. meliodorum* Beck. (= *G. schneebergense* Ronniger n. hyb.), *Rumex thyrsoflorus* Fing. var. *multilaceratus* K. Reehinger n. var., *Knautia arvensis* L. var. *gracillima* K. Reehinger n. var.—J. C. Th. Uphof.

7563. PATON, D. J., AND C. DALEY. Excursion to Bendigo. Victoria Nat. 41: 144-146. 1924.—There are listed 17 plants not recorded on previous expeditions and a general description of the state of the vegetation is given.—Wm. Randolph Taylor.

7564. SETCHELL, WILLIAM ALBERT. American Samoa. Part I. Vegetation of Tutuila Island. Carnegie Inst. Washington Publ. 341. P. 1-138. Pl. 1-20, fig. 1-46. June 6, 1924.—Part I deals with the climatic and topographical distribution of all plants collected on or known to occur on Tutuila Island, together with their Samoan names and a taxonomic account. The following species, varieties, and combinations are proposed as new: Spermatophytes: *Breonia* (?) *Mayorii*, *Psychotria infundibulifera*, *Plectronia Merrillii*, *Sterculia fanaiho*, *Grewia crenata* (*Mallocoea crenata* J. R. & G. Forster), *Buchanania macrocarpa* Merrill, *Dysoxylum Huntii* Merrill, *Evodia vatiana*, *Elatostema scabriusculum*, *Vincentia dissoluta* Stapf, *Halophila ovalis* (R. Br.) Hook. f. var. *bullosa*—Pteridophytes: *Pityrogramma Brackenridgii* (*Gymnogramme Brackenridgii* Carr.) Maxon—Bryophytes: *Microdus tutuilae* Broth., *Vesicularia Setchellii* Broth., *Aneura tutuilana* Pearson, *Anastrophyllum collarinum* Pearson, *Plagiochila adelanthoides* Pearson, *Herberta tutuilana* Pearson, *Schistochila tutuilana* Pearson, *Frullania* (*Diastobola*) *minutissima* Pearson, *Stictolejeunea orientalis* Pearson, *Mastigolejeunea tutuilana* Pearson, *Leptolejeunea dolabriformis* Pearson, *Taxilejeunea Setchellii* Pearson, *Euosmolejeunea Setchellii* Pearson, *Eulejeunea tutuilana* Pearson, *Colurolejeunea tutuilana* Pearson—Phycophytes: *Peyssonnelia delicata*, *Ceramium punctiforme*, *Caloglossa Viellardi* (*Hypoglossum Viellardi* Kuetz.), *Hypnea nidulans*, *Gelidium delicatulum* (*Acrocarpus delicatulus* Kuetz.), *Sargassum anapense* Setchell & Gardner, *S. fonanonense* Setchell & Gardner, *Ralfsia pangoensis*, *Ectocarpus van-Bosseae* Setchell & Gardner, *Codium bulbopilum*, *Bryopsis Pottsii*, *Cladophoropsis limicola*, *C. infestans*, *Rhizoclonium samoense*, *Cladophora pinniger*, *Elakotothrix* (?) *auae*, *Lyngbya* (*Leibleinia*) *pygmaea*, *Arthrospira laxissima*, *Radaisea* n. sp.—Mycophytes (lichens): *Pyxine retirugulosa* Vain., *Sporopodium glaucinum* var. *tutuilen-sis* Vain., *Gyalecta radians* Vain.—Author.

7565. SETCHELL, WILLIAM ALBERT. American Samoa. Part III. Vegetation of Rose Atoll. Carnegie Inst. Washington Publ. 341. P. 227-261. Pl. 32-37, fig. 47-57. June 6, 1924.—A sketch of the cartography of Rose Atoll is followed by accounts of the ecology and taxonomy of the plants of the atoll and of Rose Islet. One new species is described: *Pleurocapsa Mayorii*.—Author.

MISCELLANEOUS, UNCLASSIFIED PUBLICATIONS

SAM F. TRELEASE, Editor

7566. ANONYMOUS. Expedition of the California Academy of Sciences to the Revillagigedo Islands. Science 61: 359-360. 1925.—This is an announcement of the personnel and plans of the expedition for the summer of 1925.—C. J. Lyon.

7567. ANONYMOUS. [Rev. of: COMPILATION FROM OFFICIAL SOURCES. **The year-book of the scientific and learned societies of Great Britain and Ireland: a record of the work done in science, literature and art during the session 1923-1924 by numerous societies and government institutions.** 41st annual issue. vii + 405 p. C. Griffin & Co.: London, 1924.] *Nature* 115: 223. 1925.—“Compared with last year’s Year-Book, that for 1924 has been increased by sixteen pages, and we understand that seven societies have been added to the list. The increase affords some measure of the steady and healthy progress of scientific thought in Great Britain. . . . The volume as it stands is, however, a valuable work of reference, which all who would keep in touch with scientific movements in the British Isles would do well to have at hand.”—*Frederick V. Rand.*

7568. CLARK, AUSTIN H. **The Navy’s oceanographic program.** *Science* 61: 269-276. 1925.

7569. FORD, A. H. **China and the Pan-Pacific Food Conservation Conference.** *China Jour. Sci. and Arts* 2: 95-99. 1924.—In China there are many men who have specialized in American and European Universities in scientific subjects connected with agricultural and engineering progress, only to return to China and find there is nothing for them but teaching English in some school or college. However, these young scientists have not all given up in vain. Many of them are carrying on applied ecological investigations as a side-issue. Some of these by-products are extremely important. No doubt these young men are laying the foundations for future investigation and food conservation in China.—*C. S. Gibbs.*

7570. FROBERVILLE, L. F. DE. **Purification of refuse waters from sugarmills.** A review of various practical methods. *South African Sugar Jour.* 8: 857, 859, 861. 1924.—The author describes several processes which have given good results in purifying the waste water from sugar mills. When not used for irrigation this water is spread over certain pieces of land and gives off offensive odors and menaces health through the pollution of streams.—*Nellie E. Fealy.*

7571. JOLLOS, V. [Rev. of: KRAUS UND UHLENHUTH. **Handbuch der mikrobiologischen Technik.** Bd. 1. Urban u. Schwarzenberg: Berlin, Wien, 1922-1923.] *Arch. Protistenk.* 49: 145. 1924.

7572. MENZIES, A. W. C., E. M. COLLINS, AND P. L. TYSON. **A simple circulation pump for gases.** *Science* 61: 288. 1 fig. 1925.—The gas is forced to circulate in a closed system by means of falling droplets of mercury, which is raised again by an air blast. A satisfactory model is furnished by the Eastern Instrument Co., 109 Oliver St., Newark, N. J.—*C. J. Lyon.*